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ORIGINAL ARTICLES.

SOME IRREGULAR FEATURES OF LOBAR PNEUMONIA.

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ACUTE lobar pneumonia is one of the most common and most important of the severe acute diseases. On account of its sudden onset even to those most vigorous in health, its gravity and quick termination in death or recovery, its proneness to attack all grades of society, from the worthless alcoholic to the most useful and valuable citizen, its increasing prevalence and severity, this malady impresses the physician probably more than any other disease. When we enter the sick room and find a serious case, which examination shows to be one of pneumonia, we immediately bow with profoundest respect to a "foeman worthy of our steel."

The regular features of lobar pneumonia are so well known to every physician that in this paper I shall call your attention only to some of the irregularities of the disease which have impressed me during the past ten years.

One of the most common of these which a physician must meet is the sequel empyema. In my experience this occurs more frequently in childhood and early life, although it followed pneumonia on one occasion in a man about fifty years old at the City Hospital while I was interne at that institution. The patient generally passes the crisis as usual. The temperature may, or may not, go to normal. I have not yet, however, seen a case in which the pain and distress completely left the affected side. In from twenty-four hours to a week the temperature begins to rise and fluctuate, the pulse becomes weaker and more rapid, chills or chilly sensations occur, indicating the presence of pus. Why does this complication follow pneumonia? In all, or nearly all, cases of lung fever the inflammatory process involves more or less of the adjacent pleura. It is infrequent, however, that the germ finds its way through the pulmonary pleura, so the congestion and irritation of the membrane causing the pain in the side generally clears up with the subsidence of the pneumonic process. If, however, the resistance of the pulmonary pleura is overcome and the germs find their entrance to the pleural cavity, already congested and inflamed, they change a plastic or serofibrinous pleurisy to a purulent one, and empyema results. This accounts for the fact that in the pneumonia which precedes an empyema the patient is apt to suffer more acutely with prolonged pain in the side; at least that has been my experience. I will cite two cases illustrating this.

J. M., aged twenty-two years; taken sick with pneumonia June 30, 1899, and passed the crisis July 16. During the whole process of the disease the pain in the affected side would not yield to counterirritations and but little to ordinary doses of codeine, at the crisis the temperature dropped to 99.5° F. in the mouth, the delirium subsided and the patient slept, but when awake still complained of pain. This continued for forty-eight hours, when the temperature again rose, dulness on percussion became flatness and the aspirator showed the presence of pus.

George O'R., aged four years, was taken with pneumonia the latter part of June, 1903. The attack subsided by lysis in about twelve days. The child began to improve and run about the house when the case was discharged. He would, however, at times put his hand to his side and complain of pain. I was called the last of July to see him again, and found the pleural cavity filled with pus. As I left for my vacation that day, I turned the case over to Dr. Hill for operation.

Other similar cases might be recounted, but time will not permit. We should then never lose sight of the fact that any case of lobar pneumonia may be followed by empyema, that it is likely to be so followed in children and young adults whenever the pleura is extensively involved and the pain unusually severe and prolonged. When the temperature does not subside in eight or ten days, or rises again after the crisis, when the dulness changes to flatness, when the bronchial breathing and subcrepitant râle subside, and vesicular breathing does not take their place at the lower portion of the lung, we should at once aspirate. It is a simple procedure, is not in the least dangerous, inflicts but little pain, and clears up all obscurity. If pus be found, no time should be lost before operating, unless the patient be very weak, when, I believe, the pus should first be drawn off with an aspirator, and shortly afterward, when the patient becomes a little stronger, the chest should be opened and thorough drainage established.

Another irregularity of lobar pneumonia, and one which is always obscure to the physician and often leads to an error of diagnosis, is the so-called central pneumonia, or pneumonia with late localization. You are called to see a patient who, perhaps, has had a slight chill. The temperature is probably quite high. He may have some gastric disturbance. He generally has a little cough and may have a slight pain in the side or none at all. On examining the chest no ab-

[1] Read before the Hudson County Medical Society, October 14, 1904.

normality whatever can be detected. This goes on for several days before any dulness, bronchial breathing or crepitant râle can be detected. There are cases on record which have passed the crisis before a slight pleuritic friction sound established conclusively the diagnosis. Yet the history of the case, the general appearances and actions of the patient, the cough and tenacious expectoration which are usually present, and the rapid respiration are at least suggestive. I well remember such a case in a child four or five years old whom I attended two years ago. All I could find wrong for the first six days was a temperature running from 105° to 106.5° F. with the symptoms which accompany any high temperature. There were absolutely no abnormal physical signs. There was not even a cough to help in making a diagnosis. On my way to see the little patient I used to spend my time studying how to avoid answering the parents' perplexing questions. At last I detected a little dulness and crepitant râles near the apex of the right lung. Although apparently so little of the lung was involved, the temperature was higher and more prolonged than that of any other case of pneumonia I have ever seen. In fact the amount of involvement of the lung in any case does not seem to influence the temperature.

I will next call your attention to what Osler calls migratory pneumonia. It begins in a certain lobe, runs its course there, during which time it extends to one or more other lobes. In such a case there may be a crisis for each lobe involved, indicated by a drop in the temperature and a somewhat improved pulse. But only after the final crisis does the temperature become normal. I will cite such a case which I attended four years ago.

Dorothy S., a girl of fourteen years, taken with pneumonia March 27, 1900. The lower lobe of the right lung was involved. It extended to the middle lobe about March 31. She had a temperature running from 103° to 105° F. April 3, or about a week after her initiatory chill, the temperature dropped to 101° F. and the pulse improved to correspond. It was the crisis for the lower lobe. Afterward the temperature again rose and I found the upper lobe involved while the bronchial breathing and subcrepitant râle completely left the lower lobe, and normal vesicular breathing took their place. She now ran a temperature of about 99° F. in the morning to 101° F. at night for about two weeks more, when the upper and middle lobes gradually cleared. All this time the apex of the lung was dull on percussion and showed bronchial or bronchovesicular respiration. I feared tuberculosis but a microscopical examination of the sputum showed no bacilli, only the pneumococcus. This case is also an example of delayed resolution,—a condition which happens quite frequently when the consolidation is at the apex. This girl made a good but slow recovery, spending the summer in the country and returning in the fall in the bloom of health.

Another feature of pneumonia to which the text-books and the profession have, in the past, given too little attention, is the complication of tympanites. This most grievous affection is pronounced by Gilman Thompson as much to be dreaded as the same condition in typhoid fever. It appears rather late in the disease and more frequently in those cases suffering with severe toxemia. It is caused by a partial paralysis of the stomach and bowel accompanied by fermentation of their contents,—a condition, I fear, often aggravated by too much opiate and a too copious diet of milk. The disorder has a twofold disastrous effect. First, mechanical. The abdominal viscera press upward against those of the throax embarrassing the unaffected portion of the lungs used in breathing and a heart already well nigh exhausted with overwork. Second, toxic. The products of malfermentation are absorbed and add to the toxemia of the disease. Unless this condition can be relieved in a reasonable length of time, I am convinced we cannot hope to save our patient. The abdomen should be examined with as much care as the chest at every visit by the physician and the first sign of tympanites properly combatted.

An irregularity of pneumonia which has attracted considerable attention in the medical profession during the past two years is the sensation of the initial pain of the involved pleura, not in the chest, but in various parts of the abdomen. This may lead the busy practitioner to the inference that he has to deal with a case of gall-stones, peritonitis or appendicitis. This phenomenon is explained by Herrick, of Chicago, by the fact that when there is irritation of the end of one branch of a nerve, pain may be referred to the end of another branch, like the well known phenomenon of hip-joint disease producing pain in the knee, or the passage of a stone through the ureter producing pain in the testicle. The lower six intercostal nerves supply the abdominal wall as well as part of the parietal and diaphragmatic pleura. So the involvement of these portions of the pleura by an adjacent pneumonia may, by irritating the supplying branches of the intercostal nerves, refer the pain to other branches or those supplying the abdominal wall, and the patient will feel severe pain in some portion of the abdomen. In these days, when abdominal pain suggests to every physician the possibility or presumption of appendicitis, we should never lose sight of a possible pneumonia. Herrick, of Chicago, and Griffith, of Philadelphia, cite instances where appendectomy was nearly decided upon in several cases of overlooked pneumonia. In one case the disease was only discovered by the routine examination of the chest before giving the anesthetic.

This reference of pain to the iliac region may occur at any time of life, but is more common in childhood. The muscles supplied by the nerves to which the pain is referred, have usually a certain amount of the rigidity which we expect

in peritoneal inflammation. There may even be some bulging suggesting a tumor, which confounds the physician still more. I will cite two cases of this referred pain in pneumonia occurring in my own practice.

I attended Mrs. J. in confinement one evening about six years ago. At my post-partum call the next day I found her husband in bed with what he called a severe stomachache. He had returned from Pennsylvania that morning, having eaten heartily of lobster and other things the night before. He said he shook with the cold while passing through the mountains at which time he vomited the lobster and beer of the night before. I asked him to put his hand to the pain and he pointed to a spot about an inch above McBurney's point. There was rigidity of the right abdominal muscles and seemingly pain on pressure. Yet I managed to press deeply on his appendix when his attention was diverted. I diagnosed indigestion with a mental reservation of gall-stones or appendicitis and gave him a dose of calomel. I confess pneumonia was not thought of. The next day the pain had shifted to the region of the liver and breathing was painful. I now examined his chest and found a well-marked pneumonia of the lower lobe of the right lung. This proved a very serious case, being followed by empyema, the patient making a complete recovery in about two months.

My second case, with well-marked abdominal pains, occurred about three years ago. The patient was a girl nine years of age. I was called to her at night to give her relief from severe pain and tenderness in the left iliac region. The mother gave me the following history: The girl arose as usual in the morning and ate her breakfast. She then complained of feeling ill, and of a pain in her stomach. The mother gave her a cathartic, although this acted the pain continued to get worse, and she felt that she could not endure her condition till morning. On examination I found her temperature 104° F., pulse 115. On asking her to show me where the pain was she placed her hand on the left of the abdomen at a place corresponding to McBurney's point on the right. On examining the place I found the muscles rigid and the place seemingly very tender. I could find no tenderness over the appendix. I thought of peritonitis and those rare cases of appendicitis where the pain is on the left, without deciding just what it was. I did not think of pneumonia. Very much the same conditions continued the second day. On the third day I noticed a rapid respiration and examination of the chest revealed at once pneumonia of lower lobe of the left lung. In this instance I should certainly have advised an operation for appendicitis had the referred pain been on the right instead of the left side.

During the past year while I was on duty at St. Francis Hospital, two cases of pneumonia were sent to that institution to be operated on for appendicitis, one a man about twenty-five years old and the other a girl four years of age. Both cases had fever, a rapid pulse and pain and tenderness in the right iliac region. In neither case, however, was there quite the rigidity of the abdominal muscles one would expect in a well-marked case of appendicitis. Examination of the young man's chest showed a pneumonia of the lower lobe of the right lung. The girl, strange to say, revealed a pneumonia of the upper lobe of the left lung. Why in this case the pain should be referred to the region of the appendix I have been unable to determine.

How are we to avoid such mistakes? No doubt there are occasions when it is impossible at the beginning of an attack in children to make a differential diagnosis. At the last meeting of the American Medical Association, McCosh advised waiting a few hours in such cases before operating for appendicitis, even though the indications point to that disease. Usually, however, a thorough examination of the chest will reveal the true state of affairs, for a central pneumonia rarely gives rise to such pain. It seems to me that only irritation of the diaphragmatic pleura could cause such pain without detection, and in a few hours such a pneumonia will be apt to manifest some physical sign. Certainly the lungs should be examined in every case of abdominal pain with fever and but few mistakes will be made.

EXCISION OF THE SUPERIOR CERVICAL GANGLION OF THE SYMPATHETIC FOR SIMPLE GLAUCOMA.[1]

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BEFORE excision of the superior cervical ganglion of the sympathetic can be given a definite place among other measures, likewise more or less empirical, for the relief of chronic simple glaucoma, two questions must be answered. These questions are:

1. Is the eye ever injured or the glaucoma aggravated by the operation?

2. Does sympathectomy offer a prospect of sufficiently prolonged relief to justify us in urging it in these desperate cases, either before or in place of iridectomy?

The first question should be answered only after the weighing of much clinical evidence. One of the chief claims made for sympathectomy is that even if it does no good it will do no harm.

Actual risk to life may be eliminated, and the disordered sensation, paresthesia, pain in neck and face, paralysis of the trapezius and interference with phonation, may also be avoided by a skilful surgeon, and should not weigh against the operation if a favorable effect on the glaucoma is to be expected in a certain proportion of cases, or if the inevitable alternative is blindness.

The eye has not suffered, in any instance directly after sympathectomy, so far as the writer

[1] Read at American Ophthalmological Society, July 14, 1904.

is aware. In two or three cases (Grünert, Bericht der Ophthal. Gesellschaft, Heidelberg, 1900, p. 18. Wilder, *Journal of the American Medical Association*, February 9, 1904) it has been suggested that intra-ocular hemorrhage following the later iridectomy or subsequent acute attacks of glaucoma might be attributed to the vasomotor changes produced by paralysis of the sympathetic. The two cases of Grünert and Wilder would be disquieting, but it is evident that the danger of hemorrhage following sympathectomy is not greater, nor can it predispose to an evil result of a later iridectomy, for in all the cases of hemorrhagic glaucoma collected by Rohmer and by Wilder, seven in number, no harm has been done, and all are reported as in some respects improved. The case of hemorrhagic glaucoma reported by Dr. Price (No. 33 in Wilder's list *loc cit.*) died of uremia nine months after the operation. His daughter states that there seemed to be no return of the glaucoma, that he used his eyes with comfort to the day of his death, and often remarked the improved condition.

The doubts as to the safety of the operation raised by De Obarrio and by Angeluocci may be dismissed. Wilder in his fifth case mentions mental confusion with mild hallucinations occurring in the first week. Bichat[1] mentions mental disorder occurring a year after the operation, and states that Brown-Séquard considered this to be a result of resection of the sympathetic.

So far as I am aware, this includes all that has been offered in opposition to the operation. The chief objection is that it is ineffectual or that its influence on the disease is too brief.

In a paper published in the *Annals of Surgery* in September, 1902, the case of A. J. Rogers was described at some length. A brief résumé of the history brought down to a recent date, will show the later progress of the case and will indicate that in probable cases the result of the operation may be sufficiently prolonged to justify its adoption.

In 1893 glaucoma began with severe pains in both eyes, impaired vision and erythropsia. For a year and a half before the patient was first seen by the writer, in 1897, there had been frequent attacks of cloudy vision with rings and more or less pain. Chromatopsia was frequent and distressing, red being the predominating color. These phenomena were lessened by myotics, and after anterior sclerotomy and iridectomy they disappeared for a time. Since sympathectomy the subjective sensations have remained absent.

The operation was performed June 10, 1901, vision at that time being O.D. $^{20}/_{100}$; T. + ½ to + 1; O.S. V. O.T. + 2. The retained vision in the right eye may be attributed to the iridectomy in that eye three years previously. After sympathectomy vision improved, and in two days it was $^{20}/_{30}$. The field was enlarged laterally, not upward, where it still seems dangerously near the fixation point. In August, 1902, fourteen months later, it had approached still nearer, but in July, 1903, the field was larger than at any other time, and on April 26, 1904, vision was still $^{20}/_{30}$, the field larger in some directions, but upward it was narrower than the year before. Rogers reads with much ease for half an hour or more, quite small print. Vision, as I have stated, is $^{20}/_{30}$, that is, he picks out most of the letters of $^{20}/_{30}$, and at times some of $^{20}/_{20}$, but in a hesitating way, and if the light is changed he is easily disconcerted. In a brightly lighted place he is dazzled, and in the dusk he finds his way with difficulty.

These limitations are but natural when one considers the probable damage to the ganglion cells, and the partial atrophy of the nerve which is pale and excavated about 3 D.; but the fact remains that he had useful vision, had worked and enjoyed life without any sypmtoms of glaucoma in that eye, for more than three years. Tension in the left eye, which is blind, has been raised at times, with some dull pain and with the appearance of a symptom to which I would like to call attention. I refer to the retraction of the upper lids: Von Gräfe's sign was present in both eyes at first, but since the sympathectomy it has appeared only in the left eye, which has absolute glaucoma, and it has only been observed when the tension is raised. In the paper before mentioned I called attention to the occurrence of this symptom in certain cases of chronic glaucoma then under observation, especially to one case of unilateral glaucoma, in which the retraction of the lid was present only on the side with increased tension.

Recently a case has presented itself in which with glaucoma secondary to a dislocated lens, this sign was very noticeable. It may therefore be explained as a reflex spasm, a result of the glaucoma.

A second case which Dr. Dennett very kindly permits me to report is that of Mr. M., aged fifty-four years. Chronic irritative glaucoma of the left eye; incipient glaucoma of the right eye, May, 1902. The left eye had been failing for ten years, and iridectomy was advised tentatively, so that it might be tried on the right eye in case that developed glaucoma. The operation was performed without mishap, but vision in this eye was not improved. During the past year, in spite of the iridectomy, there has been a severe attack of acute glaucoma with iritis which produced a staphylomatous protrusion of the cicatrix of the iridectomy done with admirable technic and without complications several years ago. In the right eye there have been subtle indications of the beginnings of glaucoma for several years. Central vision has been normal, but the field has suffered, and there has been frequent chromatopsia, with pale green and lavender mottling. There is hemeralopia, and a large inconstant diffuse relative scotoma upward of variable limits. This has

1 La Sympathectomie dans le traitement du glaucome, p. 146,

made the adding of columns of figures difficult. June 16, 1902: Removal of right superior cervical ganglion by Dr. Hayward. August 23, 1904—V. O.D. $^{20}/_{20}$, very slight excavation, color of nerve rather pale. O.S. fingers counted. Nerve excavated and pale. Slight protrusion of scar above coloboma, which is of good size with free pillars.

The field of vision of the right eye taken in 1902, after sympathectomy was larger both for form and color and less variable, and the faint relative defects were less apparent than before the operation. In August, 1904, the same limits were retained. The eye has been more useful than formerly, but there is still complaint of lavender and green suffusion of the field, and of inability to see well in dim light.

In the third case of simple glaucoma the ganglion was removed by Dr. John Rogers, March, 1904. In April Dr. Alling found vision $^{20}/_{20}$ from $^{20}/_{80}$ before the operation, and the field 20° to 30° larger downward, and in October the improvement was retained. The patient is using pilocarpine from time to time. This improvement enables him to go about with much independence, and to read freely, whereas before the operation the field had been reduced to a horizontal slit up 3°, in 5°, down 10°, out 60°.

In this case the time that has elapsed since the operation is brief, but as the disease had progressed steadily, though very slowly, during a period of eighteen months' observation, it is fair to claim the cessation of progress and the slight improvement as a favorable result.

That simple glaucoma may remain nearly stationary during prolonged periods is well-known. The following case illustrates the error that might arise in claiming results for any method of treatment in this most uncertain disease:

J. F., colored, male, aged fifty-five years; May 25, 1902. V. $^{20}/_{40}$; T. at times slightly raised. Field normal except for nearly complete loss of inferior nasal quadrant, where green and red are within 5° of fixation point, blue 10° and white 15°. Nerve white, not excavated. Operation refused. No treatment. June 27, 1904, V. $^{20}/_{80}$ + ½. Nerve as before. Field: about 20° narrower than at previous examination. In inferior nasal quadrant, colors close to the point of fixation, white 5°.

In three recent cases of simple glaucoma the results of the operation have not been positive—that is, vision has not been improved, but the disease has not progressed, and the eye has not suffered.

It is to be hoped that this operation will not be allowed to fall into disuse because of any fancied difficulties it presents to patient or surgeon. The risk and discomfort is trifling in skilful hands, and the danger to the eye itself is entirely negligible. Whether this can be said of iridectomy, especially in chronic, simple glaucoma, with the field near the fixation point, is open to discussion.

A later opportunity for a brief examination of Rogers was obtained on October 25. The right eye, to all appearances, was unchanged. Tension normal. Anterior chamber of normal depth. Cornea clear. Vision reduced to $^{20}/_{70}$ and somewhat eccentric. The examination of the field shows that the fixation point had been lost from above. There has been no discomfort in this eye at any time, but the field has gradually narrowed from progressive atrophy of the nerve. In the left eye, on which side there was no sympathectomy nor previous iridectomy, there is an acute iritis with much pain. Cornea hazy, anterior chamber of normal depth, pupil small and bound to lens capsule by numerous synechiæ.

The progress of atrophy in the right eye is what had been expected, and it is surprising only that useful vision had been retained so long, more than three years since sympathectomy, with the field at that time within a few degrees of the fixation point. Undoubtedly, sympathectomy delayed progress of the disease longer than did iridectomy, and improved the nutrition of the eye, since as in Dr. Dennett's case, the iritis occurred in the eye with absolute glaucoma, on the side on which sympathectomy had not been done. In Dr. Dennett's case a satisfactory iridectomy had been done.

HOMICIDE BY A BOY DURING A STATE OF SOMNAMBULISTIC AUTOMATISM.[1]

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RECITATION OF THE CASE BY DR. MCKENNAN.

IN October, 1902, in a house at Homestead, Pa., a mother and four children were attacked and killed by blows of an ax. The deed was done at night and while they were asleep. One other child, a girl of eight years, in the same room, was struck by the ax, and notwithstanding a severe wound of the skull, recovered. There was no evidence that any one had entered the house from without. There were two sons in the house at the time—James, aged twenty years, and Charles, aged eighteen years. These brothers slept in a room directly opposite the one where the mother and five other children slept. The father and husband was dead.

The statement of events of that night as related by the two brothers will now be given.

Statement of James Cowley.—He was awakened in the night by heavy moanings, these evidently came from his mother's room; the moanings from the children sounded louder than the mother's. He heard something fall on the floor, a heavy body—might have been an ax. He got out of bed on the side toward the window, and saw Charles come out of his mother's

[1] Read before the Allegheny Co. (Pa.) Medical Society.

room with an ax in his hands. Charles did not call to him, but as he approached the bed, exclaiming "Oh! oh! burglars! robbers!" struck the bed with the ax where he, James had been lying, struck at him the second time and hit him on the thumb; the third time James pushed a rocking chair in front of him warding off the blow and grappled with Charles. After getting the ax from him he quieted somewhat, so much so that James was able to put on his trousers, still holding Charles, however, by the wrist. During this time Charles was shaking as though from great fear, and would say once in a while "Burglars! robbers!" and at no time appeared to be in his right mind. James led him to his mother's door and saw the blood in the room, and heard the moaning, then led him down stairs. He noticed that the door to the cellar was open. (The ax was kept in the cellar.) James then took him outside and towards the lockup. All this time Charles was apparently insensible to his surroundings; now and then he would resist and attempt to throw James down. When he got him into the station-house Charles appeared in the same condition. When James returned an hour an a half later, Charles appeared to talk rationally, and wanted to know what was the matter and why he was there. Under questioning James says that for several weeks Charles appeared to be very nervous, and was unable to sit for more than a few minutes in any one place; that he was easily irritated and James noted frequently that Charles would suddenly change color, getting quite pale and then red. He said that Charles secreted his plans and drawings around the house, and that subsequent to the crime a number of these drawings were found behind a picture on the wall.

After the crime he heard his sister Mamie say to one of the neighbors that she, Mamie, had said to her mother, a little while before the crime, that "Charles must be going daffy." Her mother denied this and said Charles was all right.

Statement of Charles Cawley.—Was awakened in the night by a noise as of a door being opened; punched his brother and told him that someone was in the house. He pulled on his trousers and went into the hall; he noticed his mother's door was closed, this door being directly opposite his own bedroom. He went down stairs to the kitchen, but saw nothing out of the way; he heard his little sister call and went up stairs. He noticed his mother's door was open, and that a lamp was burning in the room. *He heard no sound* but saw some blood on the wall or on the bed; he did not go into the room; he saw an ax lying in the doorway and picked it up; he then went into his own room, and called to his brother three times; his brother did not answer; he touched his brother on the thigh with the ax to awaken him; with this the brother jumped up and grappled with him and took him to the station-house.

He says he was not asleep, but perfectly awake; that he did not commit any crime; that he knew nothing of his mother and sisters being killed, until told of it the next morning at the station-house. Upon being questioned, he said that he had been working on some patents; that he had some drawings in a scratch-book and that one day about a month previous to his crime he found a number of leaves torn out of this book, and in the book a note unsigned, which read as follows: "If you attempt to find who did this, will kill yourself and family." He took the note to the Public Safety Building, in Pittsburg, and showed it to a detective; he was told by the detective that some of the boys were playing a trick upon him, whereupon he tore up the note and returned home. He said he told no one else about this note. His sister, Mamie, however, said that he told her about it, and upon her asking him why he did not go out of the house any more, he replied, "On account of that warning."

Charles did not vary from the above description in the many times that he told us the story. Note that he heard no sound and that he did not know that his mother and sisters were killed, until told the next morning.

The grand jury returned a true bill against Charles, and he was committed to jail to await a trial for murder. Upon joint application of the attorneys for the commonwealth and for the prisoner, the court appointed me to examine Charles Cawley, and upon my request, Dr. W. K. Walker was also appointed.

We interrogated the surviving members of the family and were unable to secure any information of value from any of them except James. His statement we have already given.

We found that the father had been a heavy drinker, that James the brother had been in the workhouse, and that an older sister had a marked speech defect. We found that Charles was a delicate-looking youth with a marked puerile expression of countenance.

He exhibited distinct anatomical stigmata most marked in the formation of the ears, and in the shape of the skull which was brachycephalic. His general development was fairly good. He conversed readily, but showed indifference to the serious and terrible accusation, and while denying all knowledge of the crimes, still he did not appear discontented with his incarceration in the jail.

His education was quite limited, but he showed a tendency to the reading of rather serious books and no taste for light or romantic literature. He had been the bread winner of the family, and had a decided taste, almost a genius, for machinery, and for sometime and up until four months before the commission of the crimes, was employed to run a stationary engine.

In June of 1902, or four months before the tragedy, he suddenly stopped work and announced to his mother that he was going to work

upon a patent, that this patent would make them rich, and although the family were in dire need, and although his mother besought him to go to work, he continued to work upon this patent, and did actually take out a patent for a car-brake.

While in the jail he showed no interest in this patent and never asked what had become of it. The warden reported that he was a model prisoner, and that he was not irritable or morose. At our first visit his tongue showed evidence of having been bitten at a recent date. The only direct evidence of an epileptic attack occurred upon a day when his aunt was visiting him, when he suddenly fell and was unconscious for a few seconds, but there were no convulsive movements or, if so, they were not observed. The light manner in which the aunt treated this attack seemed to us to indicate the probability that she had seen him in previous attacks of a like character.

The commission of these homicidal acts was motiveless, and would indicate that the perpetrator was not of normal mind. The evidence that Charles was the perpetrator of these acts, while circumstantial, was convincing. His previous history, including the recital of events of that night as related by his brother James, and his own very imperfect and hazy and partial recollections of the events of that night, were sufficient to convince us that during that period of time he was in a condition of somnambulistic automatism. There is the further probability that the condition had an epileptic basis, though this is not essential to the above theory. If epileptic the condition represented a true psychical epileptic equivalent.

Our testimony was to this effect and our opinion was that he was irresponsible at the time of the commission of these homicidal acts. He was acquitted by the jury on the ground of insanity.

ANALYSIS OF THE CASE BY DR. WALKER.

Conduct, as representing "character," is of interest to everyone, from the moralist and sociologist down to the village gossip. However, we may philosophize concerning it; however great our interest in it as a factor influencing for good or ill either the life of the organism which manifests it or the lives of his fellowmen, the greatest interest lies in its being a revelation of the hidden and most complex inner processes of the human mind; of its sensations or impressions, images, ideas, emotions, and instincts, the association and intertwining of which condition such conduct. The behavior of these elements, as requisite preconditions to conduct distinctive of a particular organism, is further dependent upon peculiarities of inherited organization, and of education and environment; that is, of the stored-up "experiences" of the individual organism.

No judgment of conduct is complete, therefore, which does not take into consideration the various influencing and interacting factors which thus include not only previous physical and mental occurrences in the life of the individual, but the lives of his progenitors as well.

Behavior, as a manifestation of "will," may be regarded as a selection or "choice," on the part of the individual, of one course of conduct among several, in accordance with opportunities for knowledge of all that may be involved by such choice. In this sense "will" represents a summing up of all the higher faculties; of perception, presentation, comparison, and discrimination; in a word, of judgment; and presupposes the existence in the individual of clear consciousness.

Of the essential nature of consciousness we have no definite knowledge. We may briefly consider it, however, in its known relations with the higher mental life. Formerly believed that the boundaries of one marked the limits of the other, we now know that merely a portion of mental life is represented in clear consciousness. As the lower vegetative and organic functions of the human machine are carried on without it, so the instinctive and emotional phenomena—though influencing it—may arise, develop, and be manifested without representation in clear consciousness. Automatic motor phenomena, such as balancing and walking, are instances of the unconscious in the motor sphere of our organism; and among these may be included, not only the simpler special actions of writing, but also many of the habitual, though complex, motor adjustments of our professional activities.

Essential as consciousness is to the higher development that makes for human perfection; and useful, in enabling the organism to better adjust itself to the exigencies of its environment, we now know that, once established, many of the most complex brain-processes are carried on in the presence of a consciousness so greatly modified in degree as to appear absent altogether. From clearest thought down through dream-like and hazy states, to apparently dreamless or swoon-like sleep there are all gradations. Our clearest thoughts are normally accompanied by a consciousness which comprehends many of the various sensations and impressions which reach and influence us, whether coming in from our immediate environment or the residue of past experiences stored-up in the mind as images and ideas associated with emotions; these manifest themselves to us as *dispositions* or *tendencies* leading to, guiding, or restraining action. In dreaming and in other obscure mental states, impressions, sensations, images, and emotions, are less clear and we may be conscious only of vague ideas and ill-defined feelings which dispose us to action. Consciousness may exist in a still lower state, but with ideas, feelings, and impressions too faint and confused to be consciously perceived, or at all appreciated as parts of one's mental life. These latter have been designated as subconscious, or subliminal ideas; and just as the sensations and impressions stored

up in memory are later recovered as *dispositions to action*, so these faint images of previous experiences enter into the sum total of factors which constitute our mental life, and persist as "*dispositions*," which, under favoring conditions, tend to final outlet in action.

All nervous function is conditioned upon sensation, and sensation is invariably transformed into movement or action of some kind. "Every current that runs into brain from skin or eyes or ears runs out again into muscles, glands, or viscera, and helps to adapt the animal to the environment from which the current came" (James). The brain is therefore an "organ for adapting movements to the impressions received from the environment," among which are included not only those immediately pouring in, but the stored-up impressions resulting from the previous experiences of the organism; and their elaboration and transformation occur in accordance with laws as fixed and definite as those governing purely physical phenomena.

That which is present in the mind at any given instant is therefore due to its past experiences; to previously experienced sensations, impressions, ideas, and emotions. These "stored-up" "sensations tend to final transformation into action"—that is, either action or restraint of action,—not only according to the laws governing all neural and mental manifestations in general, but, in particular, with the gradually acquired habit of reaction of the individual organism.

The most potent factor in determining the arrangement or association of these stored-up experiences is emotion as based upon the needs of the organism. These needs are represented in the instincts. The most important of the instincts are those connected with the preservation of the individual and the reproduction of the species. Of the emotions which determine the association of ideas having to do with self-preservation fear stands first in importance. What we call the instinct of self-preservation is in reality only one of the forms of fear. "Fear is a protective instinct. It serves its useful purpose for the organism in showing where danger lies; in creating an aversion to that danger; and in either forcing us to flee from it or to initiate defensive actions against it." From the lowest psychic organism to the highest and most complex represented in man, the earliest *inner* excitations to action are those characteristic of the emotion of fear, which, in its normal forms,—with the concomitant involuntary physical phenomena,—closely approximates the primitive psychic movements of the lower organisms; and in its abnormal forms even more closely resembles them. Aiming either at the preservation of the individual or of the species, they are always *impulsive*. They are dependent upon the sensation of external object, which may be dangerous in itself, or merely suggestive,—by reason of its associations,—of danger; or upon the idea alone without external object. Either of these may be followed by immediate reaction in flight or in resistance without any intervention of the will; or, as we shall see, even in the absence of clear consciousness.

As normally experienced the emotion of fear is accompanied by consciousness. Whether wholly internal, or associated with its very apparent (though involuntary) external signs, we can usually explain this fear in some way and give an account of our experiences while under it. All, however, can recall fears which could not thus be explained; with tendency to suspicions, assumption of attitude of resistance, or attempt to escape, from what particular object we knew not.

Richet, in his "Psychological Study of Fear," gives the following from his own experience as an instance of the way in which fear is divorced from intelligence: "While in Baden I was in the habit of walking alone in the evening until late in the night. The security was absolute, and I knew very well that there was no danger; and as long as I was in the open field or on the road I felt nothing that resembled fear. But to go into the forest, where it was so dark that one could hardly see two steps ahead, was another thing. I entered resolutely and went in for some twenty paces; but, in spite of myself, the deeper I plunged into the darkness the more a fear gained possession of me which was quite incomprehensible. I tried in vain to overcome the unreasonable feeling, and I may have walked in this way for about a quarter of an hour. But there was nothing pleasant about the walk, and I could not help feeling relieved when I saw the light of the sky through a gap in the trees, and it required a strong effort of the will to keep from pressing toward it. My fear was wholly without cause. I knew it, and yet I felt it as strongly as if it had been rational."

This one instance can be supplemented by others from the experiences of most of us.

Even in waking life the emotion of fear is stronger than all arguments invented to overcome it; but, more than this, the intelligence (imagination) habitually elaborates any sensation experienced while in a state of fear and makes us see the thing expected. Anyone waiting in a dark place and expecting or fearing strongly a certain object will interpret any abrupt sensation to mean that object's presence. The boy playing "I spy," the criminal skulking from his pursuers, the superstitious person hurrying through the woods or past the church-yard at midnight, the man lost in the woods, all are subject to illusions of sight and sound which make their hearts beat till they are dispelled. In all these instances the particular sensations experienced have but faint relation with the emotions as regards their intensity. It is to the peculiar mental states that we must look for explanation;—to the ways in which the intelligence elaborates the sensations, whether of sight, sound, or of internal origin.

Most markedly favoring such cooperation of the higher faculties in thus elaborating sensations are those bodily conditions accompanied by a "clouding of consciousness," familiar instances of which are furnished by alcoholism—from ordinary drunkenness to delirium tremens and alcoholic insanity,—and other forms of poisoning; the deliria produced by the toxins of disease; and the narrowed, incoordinated, or disordinated consciousness of hysteria, and other psychoses, particularly epilepsy.

We do not have to resort to instances of these pathological forms, however, in order to understand its mechanism; for this condition of clouded consciousness is normally encountered in sleep; and some of the best illustrations are seen in the phenomena accompanying sleep, or rather, the outcome of its disturbances.

Most sleep is far from being perfect and it is probable that mental activity in some slight degree always persists, hence the saying, "to sleep is to dream." Our dreams, as our waking mental states, are always limited to the materials of our past experiences. They are developed under associative laws analagous to those of waking life, although differing from them in the details of their operation.

It has been observed that of all our mental powers it is fancy, or imagination that has the fullest play in sleep. "Fancy is the mind's power for putting together past acquisitons into all sorts of haphazard relations without reference to any definite plan or purpose, and this is the usual character of the product of our dreams." The shifting ideas of our dreams group themselves around whatever happens to be the dominant emotion, unhindered and unmodified by inconsistent ideas, which, in the waking state, would at once arise to quench them. "We therefore accept any incongruity as actual until we wake up and our better judgment shows us our mistake."

In dreams, as well as in states of hypnotic, or somnambulistic origin, all perceptions fit in with the phantasms of the dream or suggested idea, and all processes originated by the one active group tend to work out their logical results with a precision and certainty unknown in normal waking life.

There is no exception to the rule that all our sensations, images, and emotions tend to be translated into action. The higher intellectual activities of our clear consciousness normally tend to inhibit and control all lower emotional and instinctive impulses. Anything which interferes with the functioning of the higher faculties increases the tendency to resultant action. In dreaming, the higher activities are partially, if not altogether shut out, without a sufficient degree of consciousness remaining to allow of "choice" in the usual sense of the term. There is no conscious direction of the imagination, hence no "will."

When the dominant emotion in a dream state is such as even in waking life leads to involuntary action, we can readily understand how much greater is the tendency to eventuate in action of vivid fears which, by reason of the removal of the higher faculties through sleep or disease, are at once accepted as realities.

The few cases given below may be of service in illustrating the "mechanism," which I have attempted thus to indicate; of the way in which conduct, whether the outcome of the haphazard imagination of dreams, or of fully developed insanity, can be interpreted as the result of brain function which may be normal, perverted, or markedly abnormal in character. Depending upon certain peculiarities, or characteristic variations in this mental mechanism we find definite relations with known forms of brain disorder.

Case I.—I. N., twenty-four years old. On the night following an encounter with a copperhead snake, suddenly awakened to find himself hanging, feet foremost, from his second-story bedroom window. In a state of panic terror he climbed back into the room. Soon he became conscious of a violent pain in the leg, examination of which discovered a denuded and bleeding shin. Gradually he recalled the principal features of a terrifying dream in which he was pursued by snakes. He had no recollection of getting out of bed, or of making his way to the window. An overturned chair between these two not only explained the wounded shin but, in all probability, also the partial awakening before his act could terminate in the more serious accident which must have resulted from a fall to the ground below.

We here have an instance of somnambulism originating in a vivid emotion of fear experienced in a dream. The dream-ideas, with resulting emotion, are readily traced to their origin in the occurrences of the previous day, accompanied as they were by considerable emotional disturbance which left its impress in memory. These data of consciousness, recombined under the influence of characteristic dream-imagination, resulted in complicated automatic movements adjusted to effort at escape from the imagined source of danger.

Case II.—This case is of like mechanism, originating in the vague emotion of fear so commonly the result of being suddenly awakened from sound sleep. Mrs. W., hearing a noise in an adjoining room where two of her children were sleeping, left her bed stealthily in order that she might not needlessly awaken her husband, who was sleeping soundly. Leaving the gas burning dimly in her own room she passed into that occupied by the children. Finding everything right she proceeded to a room across the hall which was occupied by two other children, but, hearing her husband shifting and turning in bed, stopped on the way to note whether she had disturbed him. Not directly entering, but peering through the partially opened door, she was horrified to see him crouching, wild-eyed, in bed; but

on the instant,—almost before she could realize what it might mean to her,—he sprang forward, throwing all his weight upon the door, which, in so forcibly closing, barely missed catching her by the neck. The door opened, and the husband at once appeared, by this time fully realizing the situation. He then explained how, awakening from sound sleep, he heard a noise in the adjoining room. His first thought was of burglars, and that instant, what, in the dim light, looked like a negro's head appeared in the doorway. That which followed was the result of an unreasoned attempt at defense, in appropriate action in the direction of attack, which, while carried out in a state of blurred consciousness, is clearly the outcome of automatic mental processes—sharply enough defined, however, to leave some trace in memory; to the extent in which this occurs are they capable of later introspective analysis and consequently of explanation.

Case III.—J. C. P., aged twenty-eight years. Was admitted to the Western Pennsylvania Hospital for the Insane, October 7, 1902. He presented a history of irregular epileptic paroxysms which commenced as "attacks of absent-mindedness: "These had extended over a period of three years, in which were exhibited many phenomena characteristic of epilepsy. That which I now describe led to his commitment as an insane patient. The father was awakened at three o'clock one morning by a noise as of some one falling down stairs. Upon investigating he saw his son running from the house to the barn. Following, but keeping out of the patient's sight, he saw him coming down from the haymow, a large carving knife in hand; from this point he ran to the cutting room and on through the stables as though in pursuit of some one, and thence to the carriage house. When overtaken the patient was found sitting in one of the carriages in a dazed and confused state. After some coaxing he was persuaded to go back to bed without further demonstration of violence. Upon arising the next morning his manner indicated no recollection of his violent behavior and, as he had previously manifested irritability upon coming out of earlier attacks, nothing was said to him concerning this one.

Questioned regarding this attack, he, sometime after admission to the hospital, told the following story: "I remember all about it and everything that occurred while I was in it; but realizing what a fool I had made of myself I determined that if they said nothing about it, I shouldn't. Of course, I couldn't help what I did, for I didn't seem to know anything about it until I got awake and found myself seated in the carriage; then it all at once came to me. I seemed to remember that I had a dream, and the dream happened in this way: On the previous afternoon, attempting to collect a long standing bill, I had an altercation with the man who owed me. Returning home tired, worried, and out of temper, I ate but little supper and retired early for the night. Lying in bed studying over the occurrence of the afternoon I again worked myself into a temper and I recall the thought that if I'd only had a knife with me I'd have been mad enough to use it. I fell asleep and, of course, had no recollection of anything further until I found myself sitting in the carriage with father and my frightened brothers around me. Like a flash it all came to me. I recalled the details of a dream in which was continued the quarrel of the previous afternoon. My enemy was trying to get away from me; I was pursuing him. I dimly recall getting into my clothes. On my way down stairs I stumbled over a pair of shoes, falling headlong. On my feet in an instant, I went to the kitchen table; opening a drawer I took from it a carving knife. I thought my enemy had run to the barn to escape me. Following, I saw him go into the feed-room, thence to the haymow, and then back to the cutting room, through the stables to the carriage house. Pursuing him, as I thought, into the carriage, I there awoke. At first dazed and confused, I gradually came to realize the situation, and recalled all the details of the occurrence as I give them to you. It was simply a bad dream to me. I couldn't help acting it;—indeed, I didn't know I had done anything until I awoke and it was all over, when my chief feeling was of shame at having made a fool of myself."

Having for three years presented unmistakable mental and motor manifestations of epilepsy, this case is of special interest as illustrating the mental mechanism of a complicated automatic act, from images, or ideas, having their origin in actual occurrences previous to the epileptic dream. Dwelt upon before retiring, they were elaborated during a dream-state into ideas so vivid as to be at once translated into appropriate action. This occurred without clear consciousness, but his subsequent recollection of all the events of the dream would indicate the existence of a degree of consciousness at least as marked as in two previously cited cases, which were not manifestations of epilepsy, but merely vivid dream impressions. Undoubtedly, in this instance, a product of the epileptic psychosis, it presents, in common with the cases mentioned, the essential psychic features of somnambulism; namely, vivid mental images which are accepted as real; an accompanying and underlying emotional state of fear; with disturbed impaired or almost entirely abrogated consciousness, into actions logically the outcome of the uninhibited original idea or image.

I cite these three cases to illustrate the manner in which dreaming is "dovetailed in with waking." For the elucidation of the simplest phenomena incident upon normal sleep we must look to the data of waking life. We follow the same method in our study of the obscure and apparently unrelated phenomena of abnormal mental life, whether of somnambulism, deliria, or of fully developed insanity; and in all we discover relations with previous psychic occurrences

which not only condition, but also elucidate mental phenomena which would otherwise be inexplicable.

In this brief study of the case of Charles Cawley we must therefore find what occurrences, if any, in his mental life, are consistent with the later development into the act with which he is charged; and if such are found, whether, in developing into action, they have conformed, in their principal features, to the laws governing such transformation of ideas into acts; and, in so far as this relation is discernable, are we justified in finding explanation of all which at first sight seems so obscure and puzzling.

As described by Doctor McKennan, we have the details of an act for which no motive can be found or, indeed, conceived; an act which all but one member of his family refuse to ascribe to the accused; and which, if performed by him, has left so few traces in memory as to suggest—to him—no connection of any active participation in the horrible affair.

What does linger in his memory, hazy and fragmentary as it is, however, corroborates the story related by the only living witness of his very significant behavior following the extreme violence at the height of the paroxysm: of his attitude of extreme fear as, with uplifted ax and exclamation of Burglars! burglars! help! help! he attempted to continue his earlier violent behavior of which the ghastly results are the only evidence: of his continued unreasoned resistance when once apprehended in his career of violence, with graduallv lessening manifestations of fear as the confused mental state faded away and merged into clearer waking consciousness.

Can we discover any connection between this final act of violence—from its earliest apparent cause in the consciously perceived and remembered sound as of entering burglars with resulting defensive attack upon them in a state of unconsciousness—and the previous psychic experiences of Charles Cawley; that is, earlier ideas, emotions, and tendencies which might furnish the materials, as it were, capable of being transformed during a dream-state into the phantasms and visions of terrifying content, and leading to a deed so foreign to his inner nature, or to any idea ever consciously entertained by him?

Among the earliest incidents of personal history significant from this view-point is that of his failure to attend school until past ten years of age. The reason given for this is that the "walk of six miles was too much for a small boy." In itself this would appear to be of slight import; but further inquiry elicits the fact that he did not seem to want to go; that he was timid and rather than associate with other children he would remain at home with his mother. Later, when regularly attending school, he seemed bright and acquired his lessons readily, but he further manifested this retiring, shrinking, and timid nature by refraining from entering into the games usual to boys of his age.

From the details of earlier history (and these are obtained with the greatest difficulty), nothing further suggestive of marked morbidity is noted until some months prior to the commission of the deed. He, at this time, became interested in perfecting the idea of a brake for a trolley car which later he developed and had patented. Much absorbd in this he spent all his available time in study and work upon his drawings. Absorbed in his plans to the exclusion of all else he soon manifested an irritability, as of exhaustion. At times puzzled over some matter pertaining to his plans he would ask the advice of his brother; but when this was proffered would show a decided impatience and intolerance of suggestions. In manner he was restive and unsettled; sitting a short while at work upon his plans, he would abruptly put them aside and move restlessly about the room. "Could not stick at one thing steadily." The remark by some member of his family (quoted by James Cawley) that "since Charlie has been working so hard I believe he is growing daffy"—was evidently called forth by this noticeable change in manner. It was at this time that the attacks occurred while walking along the street (noted and described by his brother James). If not attacks of petit mal (though they resemble nothing so much as these) they are still of great significance as indicating his mode of mental reaction. If merely momentary fits of abstraction they are further indicative of his peculiar habit of mind,—of its tendency to be dominated by a single idea, or by anything associated with that idea. Always alert for impressions (from without or from within) in any way associated with his now soon to be completed invention, he is lost to all other impressions.

As a logical sequence there now enters the most significant element of emotion. Always secretive of his plans he grew more and more so as they neared completion. With the idea uppermost—indeed, always present (if not conciously at least subconsciously) that the results of his labors might be lost if in any way they became the property of another, he had the anonymous letter experience, related by Dr. McKennan; this most profoundly impressed and influenced him. Whether the incident be interpreted as the result of an earlier somnambulism (and it is altogether probable that this is its explanation) or an actual experience, it, to Charlie, was of sufficient importance to lead him to consult a detective. Advised to drop the matter it none the less left its permanent imprint in his emotional nature later evidenced in conduct,—that of staying in the house more closely than usual,—with his expressed reason for so doing that he feared some harm might come to him from the source of the threatening letter.

In all probability the outgrowth of the exaggerated attitude of secrecy (from the first inseparable from the method of work upon his invention) with fears of being robbed or cheated out of the fruits of his labors, this emotional ele-

ment assumes an increasing significance,—becomes, in fact, the key to the solution of the problems presented by this case. Fear, always the parent of innumerable phantoms, gradually developing into the more clearly defined and vivid fears resulting from the threatening letter incident, is seen more and more to dominate his mental life as manifested in behavior or conduct so peculiar as to excite the already quoted inquiry of some member of his family regarding his reasons for not going out of doors. In this sequence of consistent mental traits we have data of decided "prophetic importance;" for, in keeping with all that we observe in the realm of ideas —gradually acquired, frequently dismissed, and apparently forgotten, but ever reappearing to influence us in present judgments, future plans, or hopes, or fears—we find them existing, not merely as isolated or unrelated mental facts; as entities to be called up and dismissed at will, but as mental habits or dispositions to action. With attitude and general behavior as proof of a waking reaction through paths worn by habitually experienced impressions of suspicions and fear, there occurs his vivid-dream experience. Suddenly awakened in a state of extreme fear, the sensation of sound (whether real or imagined) "touches off, as it were, a train already laid." Images and ideas which have been associated with his waking fears magnified in intensity by the terror of his clouded consciousness, are but continuations of these earlier manifested tendencies. The terrifying object seems real—indeed, is present to him "because his mind is full of the thought of it."

We have seen that even waking fear does not reason. As exhibited in this condition of clouded consciousness (whether the result of a dream or of disease), the vivid fear exists as an irresistible force resulting doubly; first in the increasing fright felt by him as a result of the original semi-waking impression; second, in a series of defensive motor phenomena. A state of subconsciousness now supervening which admits of no further introspection or memory the remaining links in the chain must further be supplied by inference.

We know that subconscious or dimly conscious reasoning is governed by the same laws as normal waking consciousness; that ideas, however originated, tend to work out their logical results in accordance with the laws governing normal mental action. We may infer, therefore, a further mechanism like this: Awakening in a state of fear he interprets the real or imagined noise in terms of threatened danger. Imagination running riot, all his images cluster about the idea of burglars or of threatened violence to himself or family. Upon this there follows the idea of defense,—resistance; his remembered statement to his brother upon attempting to awaken him proved this. With that of defense necessarily is associated the idea of weapon. With each accession of dream-ideas the state of fear gathers momentum, and further transformation into action is continued without any intervention of clear consciousness, or rather, with consciousness so diminished that it is completely monopolized by the very intensity of the emotion. He automatically makes his way to the cellar where the ax is habitually kept; automatically returns to the place where he first located the noise (in his mother's bedroom). The state of fear having increased with movement or action; and with consciousness now so bedimmed that all objects which strike his senses are made to enter into the framework of his dream,—the figures of his mother and sisters are transformed by his vivid imagination into the expected burglars upon whom he makes attack with the result now so well known. Continuing in his blind fury he next enters his brother's room, but here he meets with opposition or resistance. The more forcible or powerful stimuli due to this resistance reach, to a certain extent, his beclouded consciousness, leaving impressions in memory which, vague and indefinite though they are, serve as connecting links with his later clear consciousness into which it gradually merges, bearing as permanent imprints of the events so recently transpired, blurred recollections of those of the beginning and of the ending of the paroxysm only.

The act of violence thus results from the transformation, in a dream or subconscious state, of the ideas, suspicions, and fears habitually dominating the waking life. The production of disorders of consciousness,—whether temporary or prolonged we know to be favored by long continued or intense concentration of the attention upon a single thing. This is true of even a healthy person. In states of lowered nerve tone, long continued or transient concentration,—or merely a single vivid impression,—may result in disordinated or disintegrated mental states. Resembling those cases developing upon a hysterical basis; or as brought about by hypnotism; they are also the products, in certain instances, of acute and chronic alcoholic poisoning. Such narrowing of the field of consciousness to a few ideas, with their concomitant emotions, whether resulting from ordinary or from pathological causes, needs, in the vulnerable individual, but slight disturbing circumstances to bring to the surface their logical manifestations in attitude, word, or deed. Depending upon the degree of vitality—that is "stability"—of the higher centers the cause may be slight or severe but, in a given case, must be regarded as adequate to its observed results. When these are such as, in themselves, bear the mark of the grossly morbid, we must seek the cause among those psychoses known to present, as characteristic features, such profound disturbances of consciousness as here observed. Pre-eminent among these stands epilepsy. Besides the unconsciousness of this attack there is additional evidence of the existence of this psychosis in the "spells" noted and described by his brother James; these closely conform, in their

principal features, to attacks of petit mal. With the warden's description of the only other observed paroxysm, and the bitten tongue noted at the time of the second examination of the patient by Dr. McKennan and myself, we have sufficient grounds for regarding the complicated automatic act of killing of five people as a manifestation of epilepsy.

Showing from early life tendencies sufficiently well marked to be labeled as morbid—of timidity, shrinking, and fears, with these traits integral parts of his temperament and organization, as evidenced by their continuation into his later school life; and as even more plainly manifested under the unusual stress attendant upon close application to the work of his invention, we have continuous and consecutive phenomena indicative of his peculiar type of reaction to stimuli, both from without (physical) and from within (psychical). The vulnerability or "instability" is further traced to its origin in heredity from an alcoholic father. A like tendency to reversion to psychic movements of a primitive character is seen in at least two other members of the family; his next older brother—a convicted criminal—and a sister, who presents in marked degree a neurotic speech defect. These "brand-marks" of a degenerate organism complete the chain of clinical evidence which, from earliest manifested morbid trait to final act of violence, accord with the laws governing alike the physical and mental development with manifestations of abnormal brain-processes.

DIAGNOSIS OF DISEASES OF THE UPPER ABDOMINAL REGION. A PLEA FOR EARLIER SURGICAL INTERFERENCE.[1]

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NO ATTEMPT will be made to differentiate all the diseases referable to the upper abdominal region, but I shall confine myself to those diseases which are now classed as surgical. Even with these restrictions I can make only general statements in this plea to show the necessity of a differential diagnosis and the importance of early surgical interference.

Within the past five years, Mayo, Murphy, Moynihan, Mikulicz, Rodman, Robson, Roux, Kocher, Krönlein, and many others, by exploring this region, have not only verified many of the theories of the internists, but have worked out new problems in pathology, diagnosis, prognosis and treatment. In diagnosis they have substituted direct examination by sight and touch, for indirect inferences from uncertain symptoms. In treatment the procrastination of a conservative inactivity has given way to timely and rational surgical procedures.

These pioneers are now doing in the upper zone of the abdomen what the gynecologists have been doing for fifteen years in the pelvic region. They are waging the same battles, gaining the same victories, overcoming the same opponents, as the abdominal surgeons have been doing for ten years in the right iliac region.

Before the surgeon invaded this region and claimed certain lesions as his own, the diagnosis of its diseases offered insurmountable difficulties to the physician. While the internist was hesitating and waiting to verify his diagnosis, the disease was advancing, or the patient had already met with some disaster.

In this region the stomach may be looked upon as the organ of most interest, because it is the one most apt to give prominent symptoms, not only when it is diseased itself, but, very frequently, when a disease arises in one of the other organs, it affects this viscus, both directly and indirectly. As in health the pyloric portion is the most important factor in the muscular function of the stomach, so in disease it is the principal part to be studied. In the majority of cases the pyloric end is the site of ulcer and cancer and their complications, and in gall-stone disease adhesions here produce their worst effects.

This group of organs includes the pylorus, gall-bladder and ducts, pancreas, and transverse colon, all of which lie below the right lobe of the liver and are situated very close anatomically to each other, or as Mayo says "the palm of a hand may cover a serious lesion of any one of these organs." When one organ in this group is diseased it causes a disturbance in function of one or more of the other organs and often changes their relative positions; therefore there is still greater confusion as to the true seat of the disease, especially, when only indirect methods of investigation are applied. In disease these organs are so closely related and so intimately associated, it is often difficult properly to refer the very valuable symptom of pain, or tenderness and resistance, or even a tumor.

It is no wonder that patients suffering from surgical lesions are treated for "indigestion," "stomach troubles," "liver troubles," biliousness," etc., and plied with a new favorite formula every time a different physician is consulted. In many of these cases if we would recognize the true value of symptoms, and endeavor to differentiate actual conditions, we should get better results. Oftentimes in these cases if we realized that an accurate diagnosis was not possible, but we were assured that there were sufficient pathological changes taking place in the patient's abdomen to justify an exploratory laparotomy, we could not only clear up the diagnosis, but we would be taking the preliminary step in relieving some mechanical condition or removing a new growth.

As an illustration of the confusion of symptoms, as well as confounding of medical minds, I will cite the following case, which also brings out another point in differential diagnosis:

[1] Read before Physicians' and Surgeons' Club of Jersey City, November 7, 1904.

Case I. Stones in Gall-Bladder; Movable Tumor; Cholecystostomy.—Mrs. J. W., thirty-five years old, the mother of five children, complained for years of various digestive disturbances, with a capricious appetite, and intermittent pain in the upper part of the abdomen. Was treated for two years for dyspepsia by various physicians, until the last attendant discovered a tumor in the right upper quadrant of the abdomen, and rightly interpreted it as an enlarged gall-bladder with stones, for which he sent her to the hospital for operation. The location, size, and mobility of the tumor caused some doubt among the physicians and surgeons, who examined the case at the hospital, as to whether the swelling was the gall-bladder, or a floating kidney (which also gives symptoms referable to the stomach). At the operation the tumor proved to be an enlarged gall-bladder, containing numerous small and seven large stones, one of these blocking the cystic duct and causing obstruction to the outflow of the secretions of the gall-bladder, and the inflow of the bile. The gall-bladder contained about three ounces of a straw colored fluid, and simulated a cyst in outward appearance. It is needless to say that the disturbances of digestion disappeared after her recovery from a cholecystostomy and drainage.

There were no adhesions in this case, and the stomach symptoms were probably reflex. Ordinarily, we would not expect it to be a difficult matter to make a diagnosis of cholelithiasis, if we bear in mind that symptoms, referable to the stomach, may be caused by disease in the bile passages, and if we make a thorough examination of the case, and get a history of cramps, coming on suddenly and disappearing suddenly, with tenderness at the Mayo-Robson point. We shall not often feel a tumor as in this case, for most of the cases are too fat for a tumor to be palpated. We need not wait for jaundice to appear, before making our diagnosis, for this only happens when there is some obstruction in the common or hepatic ducts. Often in operations for cholelithiasis we find the contiguous organs bound together by firm adhesions, and when this is the case it is well to extend the investigation further, for there may be other diseased conditions, such as an ulcer of the stomach, or a pancreatitis, or the perigastritis itself may cause trouble, as we shall see further on.

With the present perfection in the technic of the operations for pathological changes so frequent in the gall-bladder and ducts, and with such a low mortality, we think it very essential to make an early diagnosis, and treat these cases surgically. By early diagnosis and operative procedures we will relieve much present suffering and prevent many annoying complications and sequelæ. The literature of this subject is replete in almost every detail, and, judging from the number of operations performed in the past five years, it would seem as if these cases had been transferred from the internist to the surgeon.

Ulcer of the Stomach.—What will be said in regard to ulcer of the stomach will apply in the main to duodenal ulcer, for, as Osler says, in the great majority of cases they cannot be separated; and, besides, on opening the abdomen we find them often associated. By means of the surgeon's explorations it has been found that ulcer of the stomach is far more common than was formerly supposed. Different operators now estimate that ulcer exists in from 1½ to 13 per cent. of the population, although the internists show statistics making the percentage below the lower estimate. In ulcer of the stomach we should expect to find a history of hematemesis, or bloody stools, pain after eating, and increased free hydrochloric acid. In 50 per cent. of the cases we do not get hemorrhages, while in other diseases as alcoholic gastritis and passive congestions in the portal system, the hemorrhages may be very profuse. I have had under treatment within the past fourteen months three cases of hemorrhage from these sources. Pain may vary as to time, or be entirely absent, and is frequently symptomatic of other diseases. Hyperchlorhydria is the rule, and consequently of great value in diagnosis, but there may be no increased acidity in ulcer, and besides we sometimes get an increase in cholelithiasis, and other conditions. If we get the combination of symptoms, mentioned above, in a young woman, we can make our diagnosis without an exploration, especially as we do not have to resort to surgery so often for their relief. Over 50 per cent. of these cases will heal under the proper diet, rest in bed four to six weeks, alkalies and larger doses of bismuth or some other powder to protect the ulcer. In the case of older subjects, especially if males, which give a clear history of ulcer, we shall not get such results by this treatment. It has been estimated by Rodman, Robson and Moynihan, and others, that over 25 per cent. of patients having ulcer will die from perforation, hemorrhage or anemia; over five per cent. of them will develop cancer on the site of the ulcer; many of them will contract pulmonary tuberculosis; while a great number of them will continue to be chronic sufferers from complications, such as perigastritis, obstruction of the pylorus and dilation of the stomach. We do not get any such percentage of mortality from the present operative procedures, and furthermore an untold amount of suffering is prevented or relieved. Moynihan gives a series of one hundred cases with two deaths, and over ninety per cent. of complete cures; Mayo reports 286 gastro-enterostomies with a mortality of five per cent. In view of these facts it is encumbent on us to make a diagnosis, and when necessary, apply the proper surgical procedures for its relief.

One would think that such a definite lesion as ulcer would give uniform symptoms, but here, as in many other diseases, the exceptional outnumber the typical cases. Of two ulcers exactly alike in size, situation, and duration, one will give the

characteristic and pathognomonic signs; the second will lie dormant for years, or at least with no symptoms to enlighten the physician or warn the patient. Again, in the same patient, the symptoms vary at different periods. At one time ulcer causes the most distressing disturbances, such as intense pain, alarming hemorrhages, and the most pernicious anemia; at another time the disease is entirely latent, and the attendant and the patient may be soothed in the hope that it has healed. The differential diagnosis is at times unavoidable, unless we do an exploration. Surgeons of the greatest experience say it is often impossible to differentiate ulcer from cancer; and sometimes, as Sippey says, cholelithiasis may give all the symptoms of ulcer and *vice versa*.[1]

As an illustration of a case of ulcer of the stomach, with no characteristic symptoms except hyperchlorhydria; and also as an instance of latent and active periods, I will note the following:

Case II. Gastric Ulcer: Perigastritis; Periodical Attacks of Vomiting; Gastrolysis; Relief for Eight Months.—T. C., aged twenty-five years, who laid no claim to moderation in eating or drinking, has had annually since 1899, three to six attacks of vomiting which came on irrespective of previous excesses. During these attacks his stomach rejected everything, even water, which he drank in large quantities to allay his intense thirst. Never vomited blood, nor had he ever detected it in the stools, although he had been told to observe them closely. Never complained of pain during or after the attacks, but during the attacks had some soreness in the midepigastric region, and pressure here increased the nausea. After the attacks were over he quickly regained his strength and drove his coal wagon again. During these years he had been the rounds of the clinics. In July, 1903, he was advised to go to the hospital for closer observation.

On withdrawal of the stomach contents after Ewald's test breakfast, free hydrochloric acid was shown to be markedly increased, averaging over 75. By the Seidlitz powder inflation test dilation of the stomach to one-half inch below the umbilicus was noticed. A tentative diagnosis of chromic ulcer with adhesions was made, and operation advised. After much hesitation he consented to an exploration, but exacted the promise (to use his own words) "to do no cutting on the stomach." After opening the abdomen we found dense adhesions between the stomach, gall-bladder, and transverse colon. We found also an ulcer, about the size of a ten-cent piece, situated on the anterior wall of the stomach, about 1½ inches from the pylorus, and one inch from the lesser curvature. The adhesions were divided, and cargile membrane interposed between adjoining organs, which procedure, it was hoped, would at least stop the vomiting. The patient made an uneventful recovery and seemed entirely relieved for about eight months. Then he began to suffer as before, and resumed his peregrinations for "a medicine to cure him." After taking many drugs from various sources, both high and low, he consented to have another operation done. He was sent to the hospital in June of this year, but just a few hours before the time set for performing a gastro-enterostomy he took a short circuit to his home.

Perigastritis.—The adhesions, which were so numerous and dense in this case, were the sequelæ of the ulcer. In such cases they constitute a perigastritis, and whereas a very common complication in ulcer, we may have them in cancer, in gall-stone disease, and in fact when any of this group is affected. A perigastritis really shows the efforts of nature to limit the diseased process; if an ulcer to put the stomach at rest, and to prevent perforation. But while the adhesions in the beginning are protective, they may be complications themselves, and cause symptoms by interfering with the mobility of the stomach; or they may cause an obstruction in the neighboring gut. According to their location they may cause pain in certain movements, as leaning forward, or backward, or kneeling. Robson and Moynihan report favorable results in over 100 cases, in which after opening the abdomen and dividing the adhesions, the right free border of the omentum was interposed. After opening the abdomen and separating such dense adhesions binding together the organs in this group, one is impressed with their intimate relations and interdependence, as Mayo so clearly set forth in his masterly oration at the last meeting of the American Medical Association. Furthermore we realize that only mechanical means will relieve such a condition as this. Before leaving the subject of ulcer and its complications, I will briefly narrate a case of perforation, which gave no premonitory symptoms before the unfortunate disaster occurred.

Case III. Perforation of Stomach; Old Ulcer; Peritonitis; Operation; Death.—W. F. L., bookkeeper, twenty-one years old, on November 17, 1903, was brought to the hospital with a history of having been attacked the previous night at twelve o'clock with sudden severe cramps. He had eaten a hearty meal about seven o'clock. No history of former trouble was elicited, except that about six months previously, he had had an attack of cramps which passed off in a few hours. We saw the case at 3 P.M., at which time he had an agonizing expression on his face, and complained of intense pain in the upper part of the abdomen, especially in the middle line. Near the bed was a basin containing about three pints of black sour smelling fluid mixed with blood clots, which he had just vomited. The upper zone of the abdomen was very tympanitic, with marked tenderness on the slightest pressure, and there was great resistance over the right rectus muscle. His pulse was 140, temperature 102.5° F., and

[1] Journal of the American Medical Association, October 15, 1904.

withal his condition seemed desperate. We made a diagnosis of perforation of the stomach, or possibly duodenum, with peritonitis already under way, and an immediate operation was decided on, as giving him the only chance of relief. The abdomen was opened, and found filled with dirty fluid, similar to that in the basin, and containing particles of undigested food. All the signs of a general septic peritonitis appeared. A perforation was found in the anterior wall of the stomach, situated three inches from the pylorus and two inches from the lesser curvature. The opening was large enough to admit the operator's finger, with which it was plugged during the first cleaning of the peritoneal cavity. A double row of celluloid sutures were inserted, inverting the perforation. They were placed with some difficulty, as the stomach walls for an area of one inch around the opening were very friable. For the first twenty-four hours the patient's condition seemed much improved, but then he began to sink, and died forty-five hours after the operation, from a rapidly increasing peritonitis.

The statistics for the mortality in cases of this kind show that the prognosis is in inverse ratio to the period that has elapsed from the time of the perforation to the time of surgical interference; and that very few cases recover when this period has exceeded twelve hours, according to Robson and Moynihan.[1] Perforations occur more frequently when the ulcer is in the anterior wall of the stomach, as this surface is not so well protected by adhesions. When they occur in the posterior wall, or in the duodenum, as they are here generally limited by adhesions, they may run an acute, subacute, or chronic course. They may form a subphrenic abscess, or penetrate the pleural cavity and simulate empyema; or the pus may burrow down through the lesser peritoneal cavity and, appearing in the region of the appendix, simulate an appendicitis. Robson and Moynihan report 40 cases of perforations in which 18 were operated on for appendicitis.

Cancer of the Stomach.—While the internists have cleared up many of the problems in the diagnosis of this alarmingly frequent disease there are still many cases presenting an endless amount of difficulties. Many investigators now claim that it is often impossible to make a diagnosis of carcinoma of the stomach without an exploration, or at any rate in time to offer any prospect of relief. As you recall, the prominent symptoms of cancer are, pain (especially when the stomach is empty), "coffee-grounds" vomit, absence of free hydrochloric acid, cachexia, and tumor, in a patient beyond middle life. If you waited for this list of diagnostic symptoms to appear, the probabilities are that you would loose the golden opportunity of staying the progress of the disease. As referred to under ulcer, it is often impossible to distinguish the two diseases, and I doubt if in some cases the parallel columns, we so often see in text-books, would help us to solve the puzzle. While pain and hemorrhage are symptoms in both diseases, they vary very much, and may be absent in either case. While it is suggestive of cancer if you can palpate a tumor, yet you may detect a tumor in ulcer with perigastritis. Even after opening the abdomen and finding the tumor with enlarged glands, mistakes have been made, a gastro-enterostomy having been performed as a palliative measure, on the supposition that the mass felt was cancerous, and yet the sequel showed that the growth was not malignant. Absence of hydrochloric acid is a valuable symptom, yet if we wait for this symptom, there is little prospect of eradicating the disease, so far has it advanced. Mayo and others lay great stress on the importance of opening the abdomen in cases of suspected cancer, for only by early surgical interference could they get such results as they do. Contrast Mayo's report of 43 pylorectomies and partial gastrectomies with seven deaths, and the utter hopelessness of the cases usually coming to us seeking surgical aid. In many the disease is too extensive to be eradicated, while others are too weak to withstand any operation. Though there are many workers in the field, there is much to be desired in the early diagnosis and treatment of cancer of the stomach.

Diseases of the Pancreas.—The diagnosis of the diseases of this organ can be made only by a resort to surgery, for the pancreas lies at the very bottom of this valley of quondam speculation, guesswork and mysticism. Opie has thrown some light on the study of its diseases, and has shown that while the pancreas is not often the seat of disease, it is well to investigate, when operating in this region, especially if we find areas of fat necrosis in the omentum. Furthermore, he has shown that when there is disease in this organ it is almost always secondary to disease elsewhere, especially to cholelithiasis.

The limits of this paper will not permit me to dwell on the many acute surgical conditions arising in the upper abdominal region, which requires early diagnosis and surgical treatment. Indeed, I do not think there is such necessity for taking up your time, for I believe the majority of practitioners to-day have abandoned the "do nothing policy" of calling severe traumatisms of the abdomen, "internal injuries," and waiting for developments; and designating as "peritonitis," all acute conditions with fever, irrespective of the cause.

It is asking too much of nature to expect her in the one case to unite a rupture, caused by some explosion from without; in the other case to close a perforation due to some accident from within.

If we realize that a disaster has occurred within the patient's abdomen, even if we have not arrived at an exact diagnosis, we cannot better assist nature than by exploring and making an effort to relieve. Delays of minutes and hours in the acute are worse than hesitating for days and weeks in the chronic cases.

1 Surgical Treatment of Diseases of the Stomach, page 313.

As to the latter class of cases, of which this paper has taken a cursory survey, I trust I have not conveyed the idea that all cases showing digestive disturbances, or other symptoms referable to this region, are surgical; nor that all, nor even a large part of, the surgical cases will require exploration for the purpose, alone, of making a diagnosis. The majority of cases consulting us for symptoms referred to this region will still be non-surgical, and will be relieved by removing the cause, regulating the diet, advising rational measures of living, and prescribing the proper medicines.

In far the greater number of surgical cases, we ought to be able to make a diagnosis by thorough investigations, along the usual lines. But if we find by our diagnosis surgical measures are indicated, we should not hesitate to offer them; for many pathological conditions can be remedied that seemed utterly hopeless only a few years ago. I believe a much earlier diagnosis can be made than formerly, if we realize the necessity for it, and if we use all the means already at our command. This consists of taking thorough and systematic histories, noting all the subjective symptoms, making repeated and painstaking physical examinations, and in using the stomach tube, when practicable, and making chemical and physical examinations of the stomach contents. If, after exhausting all these methods, and weighing all the facts, we are still undecided as to our diagnosis, we are doing our patients and ourselves an injustice by persisting in this policy of waiting for more diagnostic symptoms to appear. In such cases a surgical lesion is often the basis for the morbid phenomena; a diagnosis should be made by surgical methods, and surgical relief attempted.

THE RELATION OF CHOLIN TO EPILEPSY.

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By referring to the tables it will be seen that the neurin and cholin experiments were frequently preceded by injections of the same volume of physiological salt solution (see tables 2 and 3). In order, however, to determine the effect of the same concentration, separate experiments were made with 10 per cent. physiological salt solution (see table 4). The result was the same: at most a slight paresis of the contralateral extremities, but usually no symptoms. In one case only were pronounced symptoms noticed (table 4, experiment 2): 0.5 c.c. injected into the right parietal lobe caused slight clonic and tonic convulsions in the paralyzed limbs of the opposite side which soon became general and persisted most intensely for two hours. The day after, recovery had set in and the paresis was no longer noticeable. When an autopsy was performed on the fourth day, a hemorrhage into the right lateral ventricle was found to explain these unusual symptoms. It was interesting to note that recovery from a hemorrhage of this kind is possible.

In rabbits, paresis of the hind-limbs is not a characteristic symptom since it is seen frequently after most varied experiments. Evidently the center for the hind-limbs plays a very important rôle in these animals.[1]

A greater tendency to convulsion was not seen after cholin or neurin injections in dogs whose brain was injured shortly after birth. The entire physical and psychical development of these animals, however, shows no deviation from the normal. The ability of the nervous centers to regenerate or to assume vicarious function seems to be very marked in the early life of these animals.

In dogs the trephining was done under morphine.

The strongly convulsive action of cholin and neurin, is apparent from the above tables. Since it has been shown that cholin is as frequently found in the cerebrospinal fluid of epileptics as with destructive processes of the nervous system it will only seem logical to assume for this substance an important rôle in bringing about the epileptic attack, particularly since the cortex of epileptics is more readily irritated owing to hyperemic, chronic inflammatory or hypoplastic processes. Presumably the epileptiform attacks of general paresis are also induced by cholin acting upon a hyperemic cortex which responds more readily to irritation.

Halliburton states "The presence of cholin in the pathological cerebrospinal fluid and blood will not explain all the symptoms of general paralysis. For instance, it will not account for the fits just referred to." I agree with this author concerning the first part of his statement, that all the symptoms are not explained by the presence of cholin, but concerning the epileptiform attacks of general paresis, I believe that my experiments prove a direct connection.

Even though special stress has been laid upon the presence of cholin, it is not improbable that other products of metabolism such as ammonia and kreatinin also participate in bringing about the attack.

A short comparison of my animal experiments with cholin and neurin with those of other authors, may not be amiss.

As early as 1885, Brieger[2] discovered that cholin was toxic, yet many later text-books state that this base is without physiological action. Experimenting with rabbits and guinea-pigs, Brieger found that injected hypodermatically, it was necessary to employ ten to twenty times more cholin than neurin to obtain the same physiological action. Cats, however, were particularly

1 If, however, a considerable portion of the cortex of newborn dogs and cats is destroyed, the uninjured hemisphere will also remain behind in development and moderate doses of alcohol will suffice to bring on epileptic attacks (Guiseppe D'Abundo, Volume in omaggio al Prof. Tomaselli, Ref. Neurol. Centralbl., 1902, No. 12).

2 L. Brieger. Ueber Ptomaine. Berlin, 1885, pp. 27 to 38.

TABLE II.—ANIMAL EXPERIMENTS WITH CHOLIN.

No.	Animal used.	Time.	Method.	Amount and application of 10 per cent. hydrochlor.	Symptoms.	Autopsy.
1.	Guinea-pig. 580 gme.	June 4, 1901, 10 A.M.	The animal became asphyxiated during chloroform narcosis but could be revived with artificial respiration. 1.5 c.c. of a two per cent morphine solution were then injected subcutaneously into the abdominal wall, after which hardly any symptoms were noticed. The skull was trephined, anterior to the occiput, 3 millimeters to the right of the median line. Moderate hemorrhage from the diploe was checked by tamponade. As control, 0.2 c.c. of a 0.7% salt solution were injected into the posterior portion of the frontal lobe, the Pravaz needle being inserted 5 millimeters below the level of the skin (3 millimeters correspond to the thickness of the skull, 2 millimeters to that of the cortex.)			
		10.15 A.M.	.....	0.2 c.c.	Very severe clonic convulsions, gradually abating in severity. Ten minutes later increased tonic spasms, severe trismus with dilated palpebral fissure, severe lacrimation. Pupils do not react and tendon-reflexes cannot be elicited. The animal cannot stand but remains lying on the side. Alternating tonic and clonic spasms. Urine and feces not passed, no salvation.	
2.	Guinea-pig. 575 gme.	June 6, 11.15 A.M.	Site chosen: 2 millimeters to the left of the median line as above. Injection of 0.1 c.c. physiological salt solution. Owing to tonic spasm, the animal turns the head to the injured side. Contralateral side somewhat paretic. After several minutes again normal.			
		11.33.	.....	0.1 c.c.	The animal remains quiet for 10 minutes, then alternating clonic and tonic spasms begin, gradually increasing in severity. After these cease, the animal screams and tries to get away. After several minutes, clonic convulsions of the same side reappear. Also trismus and contraction of the muscles of the neck. The general convulsions are less pronounced on the contralateral side. Palpebral fissures are dilated. Marked lacrimation. 12 M. Paresis of all extremities, especially on the contralateral side. The animal makes vain attempts to get away but does not utter a sound. 12.10 P.M. Again severe clonic and tonic spasms in the extremities, especially on the same side. Discharge of feces and urine. 12.15 P.M. General clonus, equally strong on both sides. 4 P.M. The animal lies with extended extremities. The convulsions are repeated from time to time. 7 P.M. Death after continued convulsions	Cerebral vessels much injected. No disintegration of tissue upon the surface of the brain. The puncture begins 3 millimeters behind the olfactory bulb and 1 millimeter from the median line, penetrates the gray substance, and after extending one millimeter into the white substance, stops one millimeter anterior to the lateral ventricle. The brain shows brownish discoloration in the surroundings. Coagulated blood is found along the inner border of the left hemisphere, over the corpus callosum.
3.	Guinea-pig. 670 gme.	June 7 10.55.	Injected 2.5 millimeters to the right of the median line and 3 millimeters before the superior semicircular line. The Pravaz needle is introduced 3 millimeters deep and 0.05 c.c. physiological salt solution are injected.			
		11.05.	No symptoms.			
		11.10	.....	0.05 c.c. at site mentioned.	Several discharges of stool. 11.45. No symptoms. 0.1 c.c. more of cholin injected. 11.50. Clonic convulsions. After a few minutes, the animal falls over on the right side. Paresis of all extremities. Vain attempts to get away. Clonic convulsions of all extremities, es-	The puncture ends within the cortical substance of the right occipital lobe.

TABLE II.—(*Continued*).

					especially of the contralateral side. Spasms of the neck-muscles. Especially marked paresis of the right anterior extremity. 11.55. The animal turns around its long axis. Trismus. Dilatation of the palpebral fissure. Pupils immovable even with focal illumination. Increasing paralysis of all extremities. If the animal is turned to the right, rotation again begins. Toward evening death after continuous convulsions.	
4.	Guinea-pig. 600 gme.	June 8.	.....	0.4 c.c. (vena jugularis externa).	Marked salivation and lacrimation. Moderate general clonic convulsions and spasmodic breathing. Paresis of all extremities. The animal screams.	The puncture ends within the cortical substance of the right frontal lobe.
		June 10.	Animal lively. 0.2 c.c. physiological salt solution into the right frontal lobe. Owing to tonic spasm, the head is turned to the operated side. When untied, showed no particular symptoms.[1]			
		June 13.	Animal lively	0.5 c.c. (vena jugularis externa).	No symptoms.	
5.	Rabbit 1850 gme.	June 13. 9.30.	0.4 c.c. physiological salt solution into the right frontal lobe. Tonic spasm of neck toward left. Paresis of left anterior extremity.			
		10.15.	.....	0.4 c.c. at site mentioned.	Paresis of the hind-limbs. On running, these are dragged along.	
		10.30.	.....	0.5 c.c.	Paresis also of the anterior extremities. 11. The animal appears excited, breathes rapidly, and grinds the teeth.	
		June 14.	.....	.....	Paralysis of the posterior and paresis of the anterior extremities, which remain until the end. Since the experiment, no discharge of urine. Death.	
		June 16.	.....	.....		
6.	Guinea-pig. 540 gme.	June 14. 10.05.	0.1 c.c. physiological salt solution into the left frontal lobe. The head is repeatedly rotated to the opposite side. No paretic symptoms.			
		10.30.	.....	0.1 c.c. (at site mentioned).	Tonic and clonic spasms, increasing at once in severity. At first intermittent, later continuous. Attempt to get away. Slight paresis of the right extremities. Rotation around the long axis toward the left. Spasms less intense. Pupils dilated, do not react to light. 11.05. Death.	Heart stopped beating in diastole. The puncture in the left parietal lobe extends to the lateral ventricle. Some coagulated blood in the lateral ventricle.
7.	Guinea-pig. 520 gme.	June 15. 10.45.	0.1 c.c. physiological salt solution into the left frontal lobe. Tonic spasm of the neck toward the opposite side. No paretic symptoms.			
		11.	.....	0.1 c.c. (at site mentioned).	Increasing tonic and clonic spasms, which are less intense on the opposite side. The animal turns around several times on its long axis to the right and canot stand upright. The palpebral fissures and pupils are widely dilated and the latter do not react. Trismus. The animal does not utter a sound. Toward evening, death.	The puncture ends within the cortical substance of the left frontal lobe. No blood in the ventricle.
8.	I. Dog. (4½ months old).	Nov. 10.	After trepanation, 3 c.c. of physiological salt solution are injected into the left frontal lobe. The animal turns the head to the opposite side in tonic spasm. No paralysis.			
		10.05.	.....	3 c.c. (at site of trepanation).	Tremor of entire body, marked fall of temperature. Discharges stool and frequently assumes the sitting posture. Does not eat food placed in front of it, but merely licks at it. Background of the eye somewhat more anemic than before the injection of cholin. 9.10. Marked tremor. Blinking of the eyes. Intermittent severe tonic spasm. Tremor, extending wave-like over the entire body and steadily getting more intense. Eyes constantly closed. The anterior extremities	On the left side, a subdural hemorrhage. The sulci of the left cerebral hemisphere are strongly injected. The brain was punctured between the anterior central and the anterior

TABLE II.—(*Continued*).

					are raised from time to time. The animal can hardly walk, but sits down with every attempt.	end of the lateral central and sulcus and the puncture extended one millimeter into the gray substance. A cavity filled with blood, 8 millimeters long and 3 millimeters deep, is found beneath the ectosylvian gyrus.
		9.20		3 c.c. (at site of trepanation).	At 9.20 3 more c.c. of cholin were injected, followed by a pronounced bleeding. Temporary spasms of the neck appeared and the right anterior limb is occasionally raised as if painful. The animal falls against the chair and if turned on the side, has difficulty in raising the hind limbs. 9.50. General tonic and clonic spasms, lasting 5 minutes. Palpebral fissures widely opened. Trismus, salivation. The dog recuperates considerably and begins to run about. On the following day the animal has recovered, takes food but still has salivation and howls frequently.	
		Nov. 11. 9.25.		4.5 of 10 per cent hydrochlorate of neurin (intra-cerebrally).	At 9.25. 4.5 c.c. of 10% hydrochlorate of neurin are injected. No symptoms. 10.15. The same dose is repeated. Vomiting tremor. Eye kept closed. Salivation. Draws in the tail and falls. The animal is finally killed with chloroform.	
9.	II. Dog. (4½ months old).	Nov. 11. 10 A.M.	Perforation of the left temporal bone at a callous site.[2]	4.5 c.c. (left parietal lobe).	No symptoms except increased right knee-jerk.	
		10.15.	.....	4.5 c.c. (at same site).	10.15. Another dose of 4.5 c.c. of cholin. Tremor, fall of temperature, blinking of the eyes. Pupils react toward light. Background of the eyes much paler than before the injection.	On the vault of the skull, to the left of the median line, there is an area in the bone one centimeter long and 0.3 centimeter broad, which is transparent and does not contain any diploë. This area corresponds to the gyrus suprasplenialis and centralis.
		10.40.	Perforation of right frontal bone.	4.5 c.c. (right frontal lobe).	10.40. 4.5 c.c. of cholin into the right frontal lobe. Pupils very small, react to light. No symptoms of paralysis.	
		11.	.....	5 c.c. (at same site).	11. Another dose of 5 c.c. into the right frontal lobe. No special symptoms. Nov. 12. Though the animal was lively yesterday afternoon, it was found this morning lying on the left side. Tonic and clonic spasms were soon noticed, lasting several minutes. If the right extremities are brought into the fixed position, they remain almost motionless. When raised, the animal falls over on the left side. Salivation and frothing of the mouth.	The puncture is found in the anterior ectosylvian gyrus. Directly under the cortex, a cavity, the size of a walnut and filled with serum, is found here.
10.	III. Dog. (4½ months old).	Nov. 14.	Trepanation on the left side under morphine narcosis. Severe bleeding.			The vault of the skull shows the impressions of the gyri and corresponds to their contours.
		Nov. 15. 10 A.M.	.....	1 c.c. (at site of trepanation).	No symptoms.	Upon the impression of the coronal gyrus at a site, the size and shape of a bean, there is a membranous area which is adherent to the brain. Some loss of substance at the coronal gyrus. These changes are due to lesions of an earlier period.
		10.30.	.....	1 c.c. (at same site).	Another dose of 1 c.c. Tremor, cooling off of body. Pupils react to light.	
		11.	.....	1 c.c. (at same site).	Another dose of 1 c.c. Symptoms as above.	
		Nov. 17.	The animal appears lively.	1 c.c. of 10% neurin hydrochlorate.	After an intracerebral injection of 1 c.c. neurin, the following symptoms are noticed. Frothing before the mouth, trismus, spasms of the neck in the form of "salaam"-like motions and accompanied by short barks. General tonic and clonic convulsions, with bilateral facial clonus, lasting till evening with apparently retained consciousness. The dog is finally killed with chloroform.	Recent wound from trephining over the coronal and anterior Sylvian gyrus. Much coagulated blood under the dura. The puncture is found in the anterior ectosylvian gyrus and around it there is a hemorrhagic area 5 millimeters long and 2 millimeters broad. Accurate designs of the gyri upon the vault of the skull. Over the coronal gyrus, the bone is membranous.
11.	IV. Dog. (4½ months old).[3]	Nov. 18. 9.45.	After perforation in the region of the anterior border of the left occipital lobe, injection of 1 c.c. physiological salt solution. The animal turns the head to the opposite side.			
		10.	.....	1 c.c. (at site of perforation).	After several minutes, strong salivation, trismus, facial clonus, general tonic and clonic convulsions, urination. 10.30. Consciousness retained. The animal is killed by chloroform.	The perforation corresponds to the site of the left median ectosylvian gyrus. Vessels injected on the surface of the hemisphere, corresponding to the puncture. The puncture

TABLE II.—(*Continued*).

						is found at the juncture of the fissure supra-sylvia ant., media and the fissure ansata minor. A hemorrhagic area, the size of a lentil, is found at this place in the cortex. A loss of substance from an earlier experiment is found in the coronal and right median gyrus.
12.	Guinea-pig.	Nov. 25.		2 c.c. (external jugular vein).	The animal is weak, immobile and feels cold.	
		Nov. 26.	.....	2 c.c. (external jugular vein).	As above.	
13.	V. Dog. 6000 gme.	Oct. 10.	.....	5 c.c. (external jugular vein).	The animal feels cold and does not move. No other symptoms.	The injection was beneath the dura, without injury to the brain.
		Oct. 21.	Trepanation in morphine narcosis.			
		Oct. 23. 10 A.M.	.....	5 c.c. (subdural).	After the animal had recovered from the trepanation, 5 c.c. of cholin were injected subdurally. Marked salivation, discharge of urine and feces, fall of temperature. Pupils react.	
		10.40.	.....	2 c.c.	10.40. After 2 more c.c. are injected, intermittent convulsions lasting several minutes, appear. 10.45. The animal walks about, stumbles and falls on the left side. Consciousness retained. 12. The animal runs about and shows no special symptoms. Is killed with chloroform soon after, on account of severe convulsions.	
14.	VI. Dog. 6650 gme.	Nov. 6.		7 c.c. (external jugular vein).	Salivation, rumbling in the intestines, discharge of urine and feces. Accelerated heart action, difficult respiration. Tremor, lasting several minutes. After half an hour the animal walks about, but most of the time sits quietly, shivers and feels cool to the touch.	
		Nov. 11. 10.20.	Perforation.	3 c.c. (right frontal lobe).	10.25. Discharge of urine, salivation, tremor and fall of temperature. 10.30. Paresis of left extremities. 10.35. Tonic and clonic spasm lasting three minutes. Nov. 14. The animal has recovered but walks somewhat unsteadily. Nov. 25. In walking, the left extremities are somewhat unsteady, so that the animal slips occasionally; otherwise perfectly recovered.	
		Dec. 5.	.....	7 c.c. (crural vein).	Immediately after the injection of 7 c.c. cholin into the crural vein, feces and urine are passed. Salivation. Several slight clonic and tonic spasms. Heart action retarded but strong. Pauses in respiration owing to spasm of the respiratory muscles. After artificial respiration for fifteen minutes, the animal recovers. It lies on the side but moves freely, feels cool and trembles.	
15.	VII. Dog. 9900 gme.	1902. Jan. 13.	.....	6 c.c. (external jugular vein).	Several difficult respiratory movements. Marked palpitation of the heart. Salivation. No urination. The dog urinated while tied down. Tremor. The animal feels cool to the touch.	
		Feb. 22.	Perforation of the skull. 1 c.m. to the right of the median line. Injection of 3 c.c. physiological salt solution.[4] No symptoms. Hereupon 1 c.c. of cholin was injected into the same location.	1 c.c.	Marked salivation. Discharge of urine and feces. Severe tonic and clonic convulsions lasting five minutes. Trismus. The animal is very irritable, bears and grinds the teeth. After several minutes it behaves as	Cerebral vessel strongly injected. An area of disintegrated tissue, the size of a lentil, and not extending beyond the cortex, is found in the region of the right coronal fissure. Lateral ventricles and the rest of the brain intact.

TABLE II.—(*Continued*).

				normal. The urine discharged during the attack is free from albumin. 12.50. Exceptionaly severe tonic and clonic spasms with trismus and frothing of the mouth. If several short pauses are not included, the attack lasted fifty-five minutes. The left extremities are extended, while the right attempt to get away. Several rotatory movements. Feb. 25. The animal is killed with chloroform.

1. This experiment was done to show that intracerebral injections of physiological salt solution per se, do not give rise to special symptoms. The animal was observed for three successive days.

2. This animal was trephined shortly after birth, 4½ months ago, but not injured otherwise. This animal together with the following three were used to study the influence of former injuries of the skull or brain upon the epileptic attack. In the three following animals the brain was also injured (Animals Nos. 10 and 11 mechanically by excision and Animal No. 13 chemically by oil of turpentine). The development with all four animals was normal.

susceptible and reacted promptly to several milligrams. He, too, noticed strong salivation, abundant nasal secretion, increased peristalsis leading to the discharge of watery stools, dyspnea and at first very frequent and strong heart action. The latter leads to cardiac weakness, manifesting itself by fall of pressure. Mott and Halliburton have used this sign for the physiological detection of cholin. The statement of these two authors, that cholin does not influence respiration, is in direct contradiction to my own observations and can only hold for small doses.

According to Brieger only fatal doses of cholin (0.5 gm. to one kilo body-weight) applied subcutaneously will lead to severe clonic convulsions in rabbits. The animals will die soon after their appearance. By means of artificial respiration, these convulsions could be suppressed in part and death thus delayed. Since, however, they reappear, Brieger argues that there must be more than simple respiratory spasm. Mention is also made of the weakness of the legs, appearing first in the hind limbs, and the general infirm condition, already pronounced before the onset of the convulsions. My own experiments show without question that the tonic and clonic convulsions after intercerebral injection are independent of respiration, since they appear at first on the opposite side. The same is true for the paresis. Both cholin and neurin therefore show a certain similarity in action to muscarin or curare. Aster and Wood[1] wrongly ascribe these convulsions to pain, though in the animal experimented upon (dog), they involved other muscles besides the respiratory muscles. They also noticed that the fall in blood-pressure was preceded by an initial rise and attributed this to a muscarin-like irritation of the ends of the vagus within the heart since this symptom was also seen after dividing the vagi. It is well known that muscarin is very closely allied to cholin chemically: it merely contains one atom more of oxygen and can be easily obtained by treating cholin with concentrated nitric acid. The anemia of the retina found in my animals is due to a contraction of the cerebral vessels and agrees well with the dilatation of the splanchnics, detected by Mott and Halliburton with the oncometer. In rabbits, Brieger ocasionally found a remarkable contraction of the pupils; I generally noticed a dilatation.

Brieger[1] and Cervello[2] observed the same symptoms when neurin was substituted for cholin, but more intense. According to the latter author, the pupils are first dilated but will soon contract up to the complete miosis; weakness of the voluntary muscles up to complete paralysis of the extremities is another pronounced symptom. Adamkiewicz[3] states that the subcutaneous injection of 5 to 15 centigrams of neurin in man will lead to a tremor not unlike a chill. This he ascribes to direct irritation of the cortical centers of the pyramidal tracts. The muscles will react promptly when irritated directly but not when stimulated by way of the nerves or the spinal cord, even when the strongest currents are used. Halliburton also believes that neurin acts upon the nerve-endings of the voluntary muscles like curare. Cervello thinks the convulsions are due to asphyxia since they are said to occur only during the pauses in respiration, but the contralateral distribution of motor irritation and paralysis, seen in my experiments, disproves this. Cervello also think that the increased discharge of saliva, nasal mucus, bile, gastric and intestinal secretion, is due to nervous influences. He also states that the neurin leaves the system chiefly by way of the urine.

In conclusion, the carbaminic acid theory of Krainsky[4] must be referred to. In a very interesting and meritorious article, this author verified the observation of Haig,[5] that the amount of uric acid always falls before the epileptic attack and rises to the same degre when this is over. Haig, however, also noticed this in attacks of migraine. This phenomenon was so constant that

1 Leon Aster and Horatio C. Wood. Ueber den Einfluss des Cholins auf den Kreislauf. Zeitsch. f. Biologie, Neue Folge 19, Vol. 1899.

1 Loc cit.

2 V. Cervello. Sur l'action physiologique de la neurine. Arch. italiennes de biolog., 1886.

3 Adamkiewicz. Zittergift und Gegengift. Berl. klin. Woch., 1898. No. 40.

4 N. Krainsky. Zur Pathologie der Epilepsie. Allg. Zeitsch. f. Psychiatrie, 1897, 4, p. 612.

5 Alex. Haig. Further observations on the excretion of uric acid in epilepsy and the effects of diet and drugs on the fits. Brain, 1896, Spring, p. 194.

TABLE III.—ANIMAL EXPERIMENTS WITH NEURIN.

No.	Animal used.	Time.	Method.	Amount of neurin hydrochlorate and site of injection.	Symptoms.	Post-mortem.
1.	Guinea-pig.	1901. June 17. 11.05	0.1 c.c. physiological salt solution is injected into the left frontal lobe. Owing to tonic spasm, the head is repeatedly turned to the injured side. Paresis of the right extremities which disappears after five minutes. The animal attempts to get away.			The needle has penetrated the left frontal lobe for 2.5 millimeters, 2 millimeters from the median line. The ventricles are intact.
		11.15	.....	0.1 c.c. 1% neurin hydrochlorate.	After the intracerebral injection of 0.1 c.c. neurin hydrochlorate, the animal lies restless and hardly breathes. (Later the respiration improves.) Palpebral fissures dilated, occasional blinking. Pupils do not react to light. Corneal reflexes present. Heart-action irregular, intermittent, 117 to the minute. Shivering, marked fall of temperature. Stares and moves the ears on hearing loud sounds. The right legs paretic, especially the anterior ones. The background of the eyes somewhat anemic if compared with an animal of the same color but the vessels of the papilla could not be determined since these are already very narrow under normal conditions. The animal sees, and looks around but does not utter a sound. 11.45. The animal crouched together trembles and shivers. When raised it screams and passes urine.	
		12 M.		0.1 c.c as above	Heart-beat 160. The animal successfully attempts to get away. Repeated discharge of feces. The wound on the head is now sutured and on the following day recovery is complete. The retina appears darker than yesterday.	
		June 18. 10.45		0.2 c.c 5% hydrochlorate of neurin at same site.	Immediately very intense clonic convulsions. The head is turned to the right and left. Paresis of all extremities, especially on the right side. The right anterior leg seems to be most paretic. Marked lacrimation; passage of urine. Does not utter a sound. Background of eye not changed. Marked fall of temperature. Heart-beat cannot be felt owing to constant tremor. On touching the animal or making a loud noise it attempts to get away, as a result of which the convulsions are exaggerated. Rotates around its long axis to the right. Trismus. 11.45. Convulsions and salivation persist. From time to time the animal cries out. Retina grayish-white. 12.10. Limbs paretic, particularly the opposite side. Slight clonic twitching in the legs. Motion hardly possible and when raised screams. Slight trismus. Pupils do not react. June 20. The limbs are paretic, especially on the right side, but the animal still runs about, screams and takes nourishment. June 21. Complete recovery. June 24. Is killed.	
2.	Guinea-pig. 420 gme.	June 19, 11.15	0.1 c.c. physiological salt solution, intracerebrally on left side. Symptoms as above.			
		11.30	.....	0.1 c.c 5% neurin hydro. (at site mentioned).	Immediately severe clonic convulsions lasting about two minutes. The animal trembles, shivers and tries to get away. Paresis of the right	The needle has penetrated the left frontal lobe for 3.5 millimeters, 2 millimeters from the median line. Ventricle intact.

TABLE III.—(*Continued*).

					limbs. If turned on the back, there is a tendency to fall on the right side. Restlessness. June 20. Has recovered, shows no paresis and takes food. June 22. Perfectly well. Is killed.	
3.	Rabbit. (albino, 1650 gme.)	1902. Jan. 20. 10.10.	0.4 c.c. physiological salt solution, intracerebrally on left side. 2 millimeters from the median line.			
		Jan. 21. 10.25	.....	0.4 c.c. 5% neurin hydrochlorate (at site mentioned).	On running, droops toward the right. 10.35. Paresis of the right extremities (if the right anterior limb is pulled forward, the animal does not draw it back; this is less marked with the right hind limb). Salivation, marked tremor, can hardly stand or raise itself if laid on the abdomen. Marked tendency to fall to the right. Tendency to turn around in a circle; cannot turn to the left, except at rare intervals. No difficulty in motion forward. Vision good. 10.50. Gait is now normal. Jan. 22. Animal completely recovered. Is killed on the following day.	A wound is found at junction of left frontal and parietal lobes, 6 millimeters from the median line and extending 2.5 millimeters into the cortex. Ventricles intact.
4.	Dog.[3]	Sept. 19. 9.40.	After perforating the skull on the left side, 1 c.c. of physiological salt solution is injected. No sympoms.			On holding the skull up to the light, the impressions of the gyri can be seen upon the skull. The dura mater is adherent to brain and skull over the anterior and posterior ectosylvian gyrus and the left occipital lobe. The perforation took place at the left ectolateral gyrus. The right lateral ventricle gapes. A cavity is found in the left coronal gyrus 6 millimeters long and 4 millimeters broad, communicating with the left lateral ventricle.
		10.	.....	1 c.c. 5% neurin hydrochlor. (at site mentioned).	Tremor, fall of temperature, salivation and lacrimation. Pupils react. 10.15. The symptoms have disappeared. 10.20. After a second dose, salivation, pronounced gurgling in the intestines, vomiting, repeated discharge of feces. Paresis of all the extremities. Remains lying on the abdomen for four hours. Finally killed with chloroform.	
		10.20.				
5.	Guinea-pig.	Sept. 24.		2 c.c. 10% neurin hydrochlor. (external jugular vein).	Fall of temperature, lassitude and inability to stand on the legs. No other symptoms.	

1 Compare also the neurin experiments in table 2, No. 8 and 10.
2 See remark under table 2, footnote 2.
3 Compare above.
4 That is, three times as much salt solution as cholin solution.

the epileptic attacks could be foretold by one or two days by means of quantitative uric acid estimations unless they were very frequent or daily in occurrence. Recently Caro[1] has verified this observation, for atypical as well as typical attacks. Krainsky ascribes the decrease of uric acid to carbonate of ammonia, an abnormal product of metabolism, which he discovered in large amounts in the blood of epileptics and in proportion to the severity of the epileptic symptoms. According to this theory, the urea is not converted into uric acid by the aid of organic acids, as in the normal individual, but takes up one molecule of water according to a well-known formula and changes into carbonate of ammonia.

It is impossible, however, to attribute convulsive action to uric acid or the innocuous carbonic acid. The only substance which might induce spasms is ammonia and this possibility has already been debated above. Krainsky believes that the efficacy in epilepsy of the uric acid solvent lithium carbonate is due to the fact that lithium carbonate and ammonium carbonate are formed, the latter then being excreted as such. Bromide of sodium is said to act in the same way, since it is excreted as bromide of ammonium.[1]

It is improbable, however, that ammonium carbonate plays any rôle in the pathogenesis of epilepsy, especially in such doses capable of inducing convulsions, since the epileptic poison is undoubtedly contained in the cerebrospinal fluid[2]. This can no longer be questioned since Dide and Laquepée have shown that 0.5 c.c. of the fluid, removed after a series of attacks, will kill guinea-pigs in several hours to several minutes. It has also been shown that ammonia is found constantly in cerebrospinal fluid, but was missed in two cases of genuine epilepsy.

1 Caro. Ueber die Beziehungen epileptischer Anfälle zur Harnsäureausscheidung. Deutsch. med. Woch., 1900, No. 19.

1 Large doses of lithium carbonate and bromide of potassium are said, however, to cause reappearance of the attacks. Despite the supposed formation of lithium carbonate, the author could not detect an increased total excretion of uric acid.

2 J. Castaigne. (Société de biolog. de Paris, November 3, 1900) finds that the cerebrospinal fluid is poisonous in severe cases of nervous uremia. If injected into guinea-pigs, fatal convulsions will appear. The poison is naturally of different source and nature than in genuine epilepsy.

TABLE IV.—ANIMAL EXPERIMENTS WITH 10 PER CENT. SALT SOLUTION.

Number.	Animal used.	Time.	Amount and site of injection (10% chloride of sodium).	Symptoms.	Post-mortem.
1.	Rabbit. (2500 gme.)	May 5, 1902.	0.5 c.c. (lobus parietalis dexti).	Paresis of the contralateral extremities. No other symptoms. The following day, complete recovery.	
2.	Guinea-pig. (680 gme.)	May 5.	0.5 c.c. (lobus parietalis dexti).	Paralysis of the opposite side. After five minutes, slight tonic and clonic convulsions of the paralyzed side, which gradually become generalized. The animal screams constantly. The spasms persist and are so severe that the animal jumps up. Posture on the paralyzed side. The convulsions last two hours. *May* 11.—Complete recovery. The paralysis has disappeared. *May* 15.—No symptoms. Killed with chloroform.	Hemorrhage into the right lateral ventricle.
3.	Guinea-pig. (690 gme.)	May 13.	0.5 c.c. (right parietal lobe).	Paresis of the contralateral side. No other symptoms.	
4.	Guinea-pig. (700 gme.)	May 16. May 17.	0.5 c.c. (left parietal lobe). As above.	No symptoms. As above.	
5.	Dog. (5800 gme.)	May 16.	1 c.c. (right parietal lobe).	No symptoms.	
		May 19.	5 c.c. (left parietal lobe).	No symptoms.	

Even granted there is an abnormal decomposition of urea, it is difficult to understand why the amount of uric acid should rise after the attack to the same extent that it has fallen before it so that the total excretion of uric acid is really normal. This is very interesting phenomenon is probably merely a retention due to an aura-like vasomotor irritation, which does not permit the uric acid to pass through the kidneys. As soon as the attack is over, the vasomotor disturbance is then compensated for. This theory agrees with the observation of Krainsky that the excretion of more readily diffusible substances such as urea, the chlorides and sulphates does not stand in any relation to the attack. The marked excretion of P_2O_5 after the attacks probably indicates an increased breaking-down of the lecithin.

In conclusion, I wish to thank Prof. Arpad v. Bokay, Director of the Pharmacological Institute, through whose kindness I was enabled to work in the institute; also Dr. Hugo Lukacs, who assisted me with the animal experiments; my former assistant, Dr. Johann Firiczky and Mr. Ludwig Dupuis, who helped me in the chemical part.

New Medical Society.—The physicians of West Philadelphia have organized what is known as the West Philadelphia Medical Association. The following officers were elected: President, Dr. A. F. Targetts; Vice-president, Dr. George C. Shammo; Recording Secretary, Dr. William D. Beacon; Financial Secretary, Dr. A. P. Good; Treasurer, Dr. J. D. Brittingham; Directors, Dr. J. H. McConnell, Chairman; E. L. Graf, S. F. Gilpin, H. B. Smith, Frank Kirby, F. Mortimer Cleveland, F. R. Starkey, B. F. Wentz, A. P. Good, Charles E. Price, and J. D. Brittingham.

RUPTURED ECTOPIC PREGNANCY: WITH REFERENCE TO CASES OF THE ACUTE INTRAPERITONEAL TYPE.

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THIS paper is written with the purpose of emphasizing a single point in the treatment of acute ruptured ectopic pregnancy, namely, the mistake *of wasting time in the attempted removal of the blood-clots.* This is a point which was constantly being brought forward by early writers some years ago when laparotomy for this condition first came into general use. The following brief quotations will make this fact apparent. Thus, from Harris before the Chicago Gynecological Section:

"I think the blood, either the clots or liquid, should not be removed from the peritoneal cavity. It is equivalent to so much transfusion and if no infection takes place the patient recovers more quickly and the blood is reutilized by the system by being left in the peritoneal cavity." Longyear's conclusions given with an analysis of seven operative cases are very much in the same vein: "Beyond what can be quickly removed about the seat of operation this exudate is best left within the abdomen. Much precious time which usually contains the valuable element of life to the patient may be lost in this manipulation . . . the douche may be used but the clots will mostly remain. In my first case I attempted to make a clean job of it by these methods, and I lost the only case of the seven operated upon," etc.

Prewitt in a series of six laparotomies for this

condition lost two under prolonged irrigation and saved four under the plan of sponging out only such blood as was readily accessible. It is unnecessary to quote his conclusions. The point at issue was also brought out with more or less emphasis by Henrotin and others.

From these quotations and a review of the literature of a decade ago, despite the advice of Pozzi quoted from Schwarz, "That we remove the whole of the blood clot, placing no reliance upon the absorptive powers of the peritoneum but rather fearing the depressing influence of the accumulated clots," it is evident that in this country at least the more experienced men not only left the blood untouched but even viewed it as an asset for the patient.

Of late years this principle of gynecology seems to have dropped out of sight or if known to have been disregarded. Many operators at the present time very evidently regard the fresh clotted blood which we find lying amongst the coiled intestines as a source of future danger to be got rid of at any cost, and the literature of recent operative procedures is plentifully sprinkled with allusions to attempts at its removal. Along this line the following quotation from Munro Kerr: "The ruptured tube was ligated and removed, as much blood-clot as possible was cleared away, the abdominal cavity was washed out with salt solution," etc., and in a second case, "All blood clot was carefully removed."

From C. E. Ruth: "Abdomen was found filled with blood, after removing the blood and washing the abdominal cavity with deci-normal salt solution, the abdomen was closed," etc.

Rushmore, in a description of four operative cases which had ruptured into the general peritoneum, details the "removal of large amounts of fresh and clotted blood," seemingly as a matter of course. The same technic is also referred to in the communications of Harold Mole, Heyer and Lea and F. F. Lawrence.

Similar items are also obtainable from J. A. Clarke in a paper on this subject. His article contains the following significant sentences: "She was then *in extremis* but was given the hopeless chance. I scooped out nearly a pailful of solid clots, the whole peritoneal cavity from the diaphragm down being distended with clots; unfortunately she died on the table." Sturmer's monograph also brings out a point as to the location of the clots which will be dwelt upon a little later. "A great deal of blood had run back to the sides of the abdomen and a considerable time was spent in removing this, the head of the table being raised to allow it to gravitate to the pelvis," etc. And in a second case, "A great deal of the blood had run up by the side of the spleen and liver; this was removed with sponges," etc. Probably the most outspoken opinion in regard to the removal of blood clots in this class of cases has come from Barton Cooke Hirst in his Textbook for 1903: "After rupture, the patient's only hope lies in an immediate abdominal section, evacuation of the blood clots from the abdominal cavity and ligation of the blood-vessels, etc." And a little later on, "The blood has already been shed and is of no use to the patient. . . . The abdominal cavity should next be flushed with large quantities of sterile water. . . . I have practically given up douching the abdomen after abdominal section except in cases of extra-uterine pregnancy; there is no other means which so rapidly and so surely removes blood-clots from the abdomen; gallons are required," etc. These instances might be multiplied almost indefinitely. They may appear to be founded upon hair-lines of difference, and yet they all show a very definite purpose and intent. They bring us at once to the parting of the ways. It is so apparent to anyone who has watched its performance that this "careful removal" of scores of blood clots scattered through the abdomen is a time-consuming, shock-producing task, and the pursuit of the theory that if it is good surgery to remove some blood, then it is better surgery to remove it all, is very certain sooner or later to lead us to disaster. For the purpose of illustrating the argument I cite two cases which bring out the point very clearly. The two detailed are taken from Dr. Henrotin's records and occurred during the years of my assistantship with him. They are selected because they are typical, and the significant item of their history, common to both, a placid recovery with many undisturbed blood-clots within the abdomen, is one which could be reproduced from his records many times during the last decade. As the previous histories have little bearing on the subject, they are omitted.

Case I.—Mrs. E. P. C., aged thirty-two years; primipara; American. On the afternoon of October 13 patient was seized with a sudden violent cramping intra-abdominal pain, with great weakness. Slight show of blood from the vagina. Was seen by Dr. C. F. Ely, who diagnosed a ruptured ectopic pregnancy and referred her to Dr. Henrotin for operation. Operation at 7 P.M., at St. Joseph's Hospital. Small median incision. Abdomen was found filled with fresh and clotted blood. Extensive laceration of the right tube made out. The latter removed into the cornu of the uterus. Repair and coaptation sutures all of catgut. *Blood clots removed only in so far as they obscured the field of operation.* Abdomen closed in layers. No irrigation, no drain. Collodion seal. Convalescence absolutely uneventful.

Case II.—Mrs. C. G., aged thirty-eight years; multipara. Patient first seen by Henrotin on the night of May 15. During that evening while assisting a rheumatic husband across the floor was seized with the usual cycle of subjective symptoms accompanied by a great gush of blood from the vagina. Patient became almost exsanguinated but rallied a little before her operation early the following morning at the Policlinic. Usual median incision. Peritoneum distended with blood. Small rupture made out in the right tube one-quarter inch from the uterus; this opening in the tube was split down into the uterus and the cavity of the latter thoroughly curetted through

this opening. Tube repaired with catgut. No organs were excised, the operation being purely reparative. A great deal of fresh and clotted blood could be seen reaching high up under the diaphragm. *Only such clots as obscured the field were removed.* No drain and no irrigation. Abdomen closed in layers, using the aluminum-bronze wire and double-eyed needle after the method of Harris. Silver foil dressing. Convalescence uneventful. Discharged June 11.

When we come to think it over, the principle of letting the blood clots severely alone is a very good principle. It has two noteworthy foundations of fact: (1) A clinical history of several hundred cases treated in the way with no untoward result; (2) the knowledge that we could not get rid of the blood even if we wanted to.

If we recall that the patient as a rule assumes the recumbent position shortly after the gestation sac ruptures, we see that it is inevitable that the fresh blood should seek the lowest possible level, the posterior peritoneal wall, and thence slowly work its way up under the liver, completely out of our reach. In all probability the clots which we discover by peering among the intestinal coils form but a small part of the actual products of hemorrhage. Hidden far down on the posterior abdominal wall are masses of blood which we could not possibly get rid of without killing our patient. If any one is at all sceptical as to this he should read Prewitt's paper. In regard to the proposition of "flushing the abdomen clear," the following interesting clinical experience will be of profit to us all. Many years ago when laparotomy for the relief of intra-peritoneal septic conditions first came into general use, the idea was proposed and currently believed and acted upon, that by washing the products of sepsis out of the abdomen with a stream of running water we would give the patient the best possible chance for his life. In elaboration of this idea Henrotin had special apparatus installed in his operating room at the Alexian Brothers' Hospital. Large tanks with a capacity of many gallons were fastened high up on the wall. These were filled with hot salt solution. Such cases as were considered suitable at that time were treated by free incision in the anterior abdominal wall and prolonged forcible intra-peritoneal irrigation. In order to leave no stone unturned in this matter, in several instances free incisions were also made in both flanks and the entire force of the stream turned in, so that the patient's abdomen was a spouting torrent of water. Yet it was discovered, even after the most prolonged treatment, that a sponge pushed with very little force indeed among the coils of intestines would disclose pockets of pus which the irrigation had not even disturbed. Since that time, in this immediate part of the surgical world, the plan of flushing the peritoneal cavity with the idea of removing all intra-abdominal deposits has been discarded.

A few conclusions to end with, then, brought home to us by the two cases detailed and the long list with which they are identical.

In operations for acute ruptured ectopic pregnancy every minute is of value.

Not a single one of them is to be wasted in doing the unnecessary or trying to do the impossible.

Remove the blood clots only in so far as they obscure the field of operation.

We cannot flush the abdomen clear of blood in the time at our disposal, and much of that precious time will be wasted in attempting to do so.

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MEDICAL PROGRESS.

MEDICINE.

On What Lines is the Treatment of Malignant Disease Advancing?—Malignant disease is the subject of much study at the present time and furnishes a great share of the material for scientific endeavor and research. ROBERT ABBE (*Med. Rec.*, December 31, 1904) considers the different methods which have been advanced for the treatment of cancer. Undoubtedly gain has been made in three notable directions, viz., (1) in the recognition of the principle that carcinoma and sarcoma are primarily of local origin; (2) in recognizing the value of extensive operation in advanced cases; (3) in establishing the value of radiotherapy. Three methods of treating cancer through systematic measures have commanded some attention and may be referred to as serum-therapy, antitoxin treatment and oophorectomy. The use of serum is at present *sub judice* and awaits the report of the French Surgical Commission. There have ben enough reports to establish that a few tumors have been seen to diminish in size and disappear under bacteriotherapeutic treatment. It seems that the principle of bacteriotherapy on which the method is based presupposes an entirely unsettled problem of bacterial origin of cancer. One sees changes in the human body resulting from removal of the ovaries in cases of mammary cancer. The method devised by Beatson has been given a fair trial, enough to establish the fact mentioned, but not to place it among the list of surgical procedures for usual resort. In the consideration of radiotherapy for cancer phototherapy may be dismissed. Lupus alone yields to the Finsen light, but the same disease subjected to radiotherapy is under prompt control without light rays. It remains to consider the Roentgen rays, the ionized rays, discharged from the iron electrodes with spark, and the rays from radium. The antibacterial action, which is at best very feeble, can play but a trifling part, and the feeble heat emitted by radium is insignificant. One must look to the rays, which are of negative electrons emited by radium and to the Roentgen rays, as the power. The effects of the application of the three forms of radiation mentioned have been: many tumors dissipated, some unaffected, occasional

recurrences, and a few cures. Radium alone can be used in deep structural disease; it may be buried for hours or days according to its strength. From radium therefore we may expect the greatest future results.

Diseases of the Isthmian Canal Zone.—R. L. Sutton (*Med. Rec.*, January 14, 1905) gives a résumé of the most prominent features of the various tropical and other diseases commonly encountered in the Canal region. The lit includes malaria, dengue, beriberi, infection with intestinal parasites of numerous species, lesions due to the bites of various insects, heat exhaustion and sunstroke, acute and chronic rheumatism, dysentery, leprosy, smallpox, and yellow fever. The latter is not epidemic at present in this region, and sporadic cases are rarely seen. Malaria is more widespread than any other affection, and the estivoautumnal form is the commonest variety. Quartan infections are not observed. Dengue is the disease which most frequently attacks the newcomer, and the local form is peculiar to the unreliability of the primary and terminal eruptions, which do not possess the diagonstic value usually accorded to them, as they are absent in the majority of cases. Blood counts show an early leucopenia with a normal differential count, which is later followed by eosinophilia after the second rise and lymphocytosis as convalescence begins. Beriberi assumes both the tropical and paraplegic forms, and especially affects the Chinese contingent, although the natives do not entirely escape. Uncinariasis is the most important and dangerous of the intestinal infections, and may cause extreme degrees of anemia with hemoglobin as low as 20 per cent. Eosinophilia is very high, seldom being below 20 per cent., and in one instance being over 65 per cent. Castor oil, followed by three 20 gr. doses of thymol, at two-hour intervals, cures most cases. Dysentery, both of the bacillary and amebic type, is much in evidence among the natives, but our troops suffer little from it, owing to the careful guarding of the water supplies. Hepatic abscess is seldom encountered.

Pneumonia in High Altitudes.—A. R. Goodman (*Med. Rec.*, January 14, 1905) summarizes the statistics of the morbidity and mortality from pneumonia in the American Hospital, Mexico City, from 1890 to 1904. Of 4,367 cases of disease treated during this period, 101 were pneumonia. A marked preponderence of the disease was observed in the first six months of the year, *i.e.*, before the rainy season. The average mortality was 39.8 per cent.

Intussusception of the Appendix Vermiformis.—George Emerson Brewer (*Amer. Med.*, January 14, 1905) reports the case of a female, aged twenty-two years, who was admited to the Roosevelt Hospital in the spring of 1904, suffering from symptoms of acute appendicitis. The abdomen was opened and a prolonged search for the appendix was made without finding any trace of the organ. Five months later the patient again presented herself, complaining of constant pain and tenderness in the right iliac fossa. The abdomen was again opened, the ileocecal region dissected free from the mass of adhesions and thoroughly inspected. No trace of an appendix could be found, but on palpating the cecum an elongated oval body could be felt within its lumen. The intestine was opened by longitudinal incision and the inverted appendix was found projecting from its attachment at the interior extremity of the cecum. The mass was removed and the wound in the cecum and colon sutured. The patient made a satisfactory recovery and was entirely relieved of her symptoms. The pathological report showed the specimen to be an inverted appendix.

Inoculation of Horses with Syphilis.—Among animals the only evidences of syphilitic inoculation which have been demonstrated are those reported by Roux, Lassar and Neisser. Attempts have now been made to infect a horse by Piorkowski (*Berl. klin. Woch.*, December 19, 1904). He injected the blood from patients who had been taking active mercurial treatment in quantities of from 5 to 10 c.c., either subcutaneously or intravenously. Altogether 80 patients were taken in various stages of the disease. Each was followed by a moderate rise of temperature, and as soon as this had subsided, the injection was repeated. Four weeks after the first inoculation a maculopapular rash appeared, which was examined by various experts and pronounced by them to be syphilitic in character, both in gross and microscopical appearances. The lymphatic glands became enlarged in the submaxillary region. Infection by contact with other horses who were in the same stable was not demonstrated. Blood serum taken from this horse and injected into various small animals was not followed by any reaction. No positive conclusions are afforded by these experiments and the author is now engaged in making controls in other horses.

Sciatic Neuritis with Paralysis following Malaria. W. G. Russell (*Med. Rec.*, January 7, 1905) describes the case of a man of thirty-eight who, after an attack of intermittent malarial fever, apparently cured by quinine and calomel, developed intense pain in the thighs and down the legs. At this time the pupillary and patellar reflexes were normal, but the pain continued with unabated severity, and after ten or twelve days both patellar reflexes disappeared, and there was loss of power of the left leg and some disability of the right one. Under massage and sanatorium treatment the condition gradually improved, so that he now, about three months after the malaria, has no pain, is able to use the right leg, and to drag or push the left one along if he is helped on either side.

Epidemic of Typhoid Fever.—J. D. Briggs (*Med. Rec.*, January 7, 1905) analyses in instructive fashion the circumstances attending a serious outbreak of typhoid fever in a small, isolated community in the Allegheny watershed. The water supply of the village came from two sources, one a reservoir at some distance, and the other a nearby spring. The reservoir water had a pronounced flavor and odor, due to the presence of algæ, but it was found that the clear and more agreeable spring water was the means of dissemination of the disease, owing to contamination by drainage from an imported case of typhoid. The author points out the necessity for great care in laying out sewerage systems in the neighborhood of water supplies, and directs attention to the importance of thoroughness in the disinfection of all excreta, linen, bath water, etc., from typhoid cases. Formaldehyde, bichloride and lime preparations are greatly inferior in effectiveness to carbolic acid, which should be freely used in five per cent. solution, and allowed to act for several hours.

Tuberculosis in Japan.—S. Kitasato (*Am. Med.*, January 7, 1905), after a thorough review of human and bovine tuberculosis in Japan, concludes human tuberculosis is as frequent in Japan as in the civilized countries of Europe and America. Primary intestinal tuberculosis is relatively common in adults and children, although cow's milk plays no rôle at all in the feeding of children. There are large districts in Japan where, in spite of the existence of human tuberculosis, the cattle remain absolutely free from the disease. In these regions it is not customary to consume either meat or milk from bovines. This is very important proof for

the fact that under ordinary conditions human tuberculosis is not infectious for bovines, as the opportunities for infection certainly cannot be lacking. Among Japanese in general very little cow's milk is used, and especially is it employed but little in the dietary of children. Under natural conditions the native animals show but very little susceptibility for tuberculosis. If large doses of tubercle bacilli are inoculated into them, either intravenously or intraperitoneally, they become tuberculous to a certain degree; they do not seem to be at all susceptible to subcutaneous infection. The imported and mixed race animals are very susceptible to tuberculosis. Human tuberculosis is not infectious for native and mixed race animals.

Effects of Pilocarpine in Strychnine Poisoning.—A case was recently described in which hypodermic injections of pilocarpine were used and the patient recovered. S. J. MELTZER and W. SALANT (*Jour. Am. Med. Ass'n*, December 31, 1904) have submitted this claim to the test of experiments on rabbits and frogs and determined that pilocarpine hydrochlorate does not act as an antidote to strychnine, and that on the contrary, the addition of pilocarpine apparently supports the poisonous effects of strychnine, and by its aid an ineffective subminimum dose may have a toxic or even fatal effect. The authors think that the same conclusions may be applied to human beings, and that in the quoted case recovery was not dependent on the pilocarpine, and that the strychnine had merely a strongly toxic, but not a fatal effect, the dose not being mentioned. The indiscriminate use of the pilocarpine "as a last resort" is much deplored by the writers, who claim that in human beings each alkaloid should be employed only according to well established indications for its use and not according to theoretical notions. If the latter are well founded, they may be readily proved or tested on animals.

Tuberculosis of the Kidney, Ureter and Bladder.—J. M. BALDY and EDWARD A. SCHUMANN (*Am. Med.*, December 31, 1904) report the case of a girl of twenty-four years, whose present illness began in December, 1902, with marked frequency of micturition with burning pain. The urine was diminished in quantity and contained blood. She had occasional attacks of sharp pain in the right iliac fossa. Pelvic examination revealed upon the right side a somewhat tender, dense mass presenting all the features of a chronic adherent pyosalpinx. The mass extended apparently from the uterine cornua to the lateral region of the pelvis and was diagnosed as tubal in composition. The purine showed tubercle bacilli. A diagnosis of tuberculous cystitis, with probable tuberculous salpingitis, was made. Operation by Dr. Baldy revealed normal tubes and ovaries on both sides. The mass in the right was much thickened and distorted ureter running almost at right angles to its normal course and closely simulating an enlarged and adherent tube. The median incision was extended up toward the umbilicus and carried diagonally over the loin, ending immediately over the kidney. Through this incision the right kidney and ureter down to its vesical insertion were removed. The ureter was densely adherent throughout its whole course. The cystitis proved intractable, the bladder being studded with diffuse ulcers, revealed by cystoscopic examination. The pathological report shows both ureter and kidney to be tuberculous, the kidney being infiltrated by pus cavities.

Primary Sarcoma of the Stomach.—JOHN A. SIPHER (*Am. Med.*, December 31, 1904) reports three cases. The first had been of about two years' duration, beginning with sudden pain in the left inguinal region and later showing a hard nodular mass in the neighborhood of the spleen. At autopsy a tumor of the stomach was found, situated on the posterior surface toward the cardiac end. (Microscopically this was a round-celled sarcoma.) In the second case a gastroenterostomy had been performed a year and a half before death, for malignant disease of the stomach, the patient being much improved for a time after the operation. At autopsy a tumor was found causing complete stenosis of the pylorus. Apart from congestion the gastric mucosa was normal and the microscopical examination showed a sarcoma arising by the proliferation of the endothelium of the lymph vessels of the submucosa. There were no metastases. This is the second recorded case of endothelioma of the pylorus. In the third case a palpable tumor was present and the stomach analysis gave no free HCl and no lactic acid. A resection of the pylorus was made and the diagnosis of sarcoma was made at the operation, the mucosa not being involved. Microscopical examination showed a giant-celled sarcoma. The literature shows the total of 69 cases recorded.

Reflexes in the Diagnosis of Nervous Disturbances Following Trauma.—HENRY S. UPSON (*Am. Med.*, December 31, 1904) states that in differentiating the organic and functional effects of injury, and in excluding stimulation the reflexes are of the first importance. The reaction of the pupil to light, the knee-jerk, Achilles-tendon jerk, ankle-clonus, Babinski reflex, cremasteric and virile reflexes are those always to be tested. Others may assume importance in special cases. Absence of the knee-jerk, pupillary reflex, or Achilles-tendon jerk is according to Upson always indicative of organic disease. Some authorities have found the knee-jerk absent in one out of several hundred patients considered normal. In the absence of searching and continued observation there remains in these patients the possibility of a beginning tabes or unrecognized diabetes. True ankle-clonus is always pathological, spurious ankle-clonus and exaggerated knee-jerks are common in neurasthenics and hysterics, and at time of nervous excitement in normal people as well. The reflexes furnish the best available criterion of impotence so often alleged in damage suits. In the presence of the cremasteric and virile reflexes, with papillæ along the edge of the glans penis, in a patient suffering from no obvious organic brain or spinal-cord disease, impotence is functional, and will disappear with improvement in the general health. Absence of one, or especially of any two of these signs, makes an alleged impotence highly probable if not certain. The Babinski reflex is significant of disease of the motor tract, but its absence does not exclude such disease, as it is more often absent than present, even when the reflexes are exaggerated from organic causes.

Cause of Death in Operated Cases of Intestinal Perforation Occurring in Typhoid Fever.—ANDERSON (*Am. Med.*, December 31, 1904) reports his experience in 21 cases of laparotomy in perforation. In three the condition resembled perforation, as typhoid appendicitis, mesenteric gland infection, and obstruction from mass of round worms in the ileum; in which paralytic ileus occurred. In 12 cases the patients were operated upon under thirty-six hours from the onset of first symptoms with six recoveries. Three of these were the foregoing three cases. In the remaining nine cases the patients were operated upon from two to four days after perforation and all died. In nine cases there was special treatment by draining or irrigating the lumen of the bowel. Four of these patients recovered. In the others, the postoperative symptoms were less severe. Anderson believes that there is a danger of sep-

sis from the contents of the paralytic bowel, as well as from the peritonitis; that shock as a cause of death is usually rare during typhoid fever; that anesthesia and operations are well borne, if performed carefully; that the peritoneum acquires some immunity to infection during typhoid fever, but that paralytic ileus is readily produced in the inflamed and ulcerated intestine, and the natural protective function of the mucous membrane is destroyed and serious toxemia occurs early; that while perfecting our technic to cure the peritonitis, we must remember the contents of the paralyzed bowel may become a cause of death and must be removed.

Polyneuritis Complicating Typhoid Fever with Unusual Localizations.—Gordon (*Am. Med.*, December 31, 1904) reports a case in which the nervous phenomena pointed to a multiple neuritis, the associated unilateral facial palsy of peripheral nature making the case unusual from the standpoint of etiology, and leading Gordon to suspecting possible poliomyelitic nature. The case is that of a young man who on the fifteenth day of typhoid fever developed a right brachial monoplegia with a facial palsy on the same side. Gordon analyzes the rôle of infection and intoxication in diseases of the nervous system and concludes that the toxins of infectious diseases may affect a whole neuron (cell and its axis-cylinder) or several segments of it simultaneously.

Eyesight of Employees.—Since the very fatal collision which occurred about nine years ago, between the Elbe and the Craithie, the ophthalmologists of Great Britain have made effort to convince the Board of Trade that all employees upon whose eyesight the lives of passengers depends, should be subjected to the most rigorous ophthalmic investigation. James W. Barrett and W. F. Orr (*Lancet*, October 29, 1904) state that in Australia there has been similar agitation on the part of ophthalmologists. They have been met by the same rebuff as was experienced by the corresponding body in England, the Board of Trade in each case having affirmed very bluntly that there was no evidence to show that visual deficiency was the cause of the accident. It is quite evident that the reason for such failure of evidence was due to the fact that the gentlemen examining those who were held responsible for wrecks, made no effort to determine their visual conditions. After the wreck of the P. & O. steamer Australia, however, June 20, 1904, conditions were found by expert ophthalmological examination, which were of such startling nature that the advice of the medical fraternity in future is apt to be very closely heeded in Australia at least. In the case under consideration, the pilot boarded the Australia five miles from Queenscliffe. In entering the port, two lights must be kept in line or nearly so. The pilot stated that he was breathless from exertion of boarding but took charge and used his binoculars. The sea was not high, although it was blowing hard. Twenty-five minutes after he took charge, the steamer struck. The night was dark and it was raining. He subsequently stated that he recollected nothing after the first order to port the helm, although evidence shows that he gave orders to port on three distinct occasions. He had not been drinking and was absolutely sober. After the accident, he collapsed and was taken home and put under the care of his family physician. He was fifty-nine years of age, had a hypertrophied heart, high blood pressure and arterial sclerosis. His urine contained both albumin and glucose. He was obviously myopic and on examination was found not to have an entirely satisfactory discrimination of color. This same pilot ran the steamer Inraghiri aground on the northwest of the entrance to South Channel in the same harbor. The Court found him guilty of careless navigation, his resignation was refused, and his certificate canceled. It is obvious that directly traceable to the ocular deficiency of the pilot rather than to his negligence.

PRESCRIPTION HINTS.

Medicinal Treatment in Measles.—Small initial dose of calomel, preceded by a glycerin suppository, are useful in the first stages of treatment. The severe vomiting is usually best controlled by cracked ice, lime water or bismuth, and the insomnia overcome by small doses of trional, 2 to 3 grs., in combination with chloral. Cough is usual and is best kept in check by sinapisms. The following prescription will prove serviceable:

℞ Potassii citratis.....3ii (8.0)
Vini ipecac.....3ii (8.0)
Tr. opii camph.....3iii (12.0)
Syrupi tolutani.....3i (30.0)
Aquæ cinnamomi.....q. s. ad 3iii (90.0)
Misce. Sig. 3v q. three hours. Stevens.

Whooping Cough.—Belladonna, quinine, antipyrin and bromide combinations still remain the standbyes in the treatment of the cough of this persistent affection. Antipyrin in combination with the bromides is one of the most serviceable remedies. It may be prescribed as follows:

℞ Sodii bromidi.....gr.l (3.0)
Antipyrini.....gr.xv(1.0)
Glycerini.....3ii (8.0)
Aquæ cinnamomi.....q. s. ad 3iii (90.0)
Misce. Sig. 3i. q. two hours for one year old child.

Pain in Pneumonia and Pleurisy.—When the pain in these diseases is severe, the following combinations of opium are useful:

℞ Pulveris opii.....gr.iv (0.25)
Hydrarg. chlor. mit.....gr.v (0.06)
Pulveris aromatici.....gr.x (0.6)
Misce. Et fiat chart. No. vi. Sig. One powder every half hour until relieved. Or
℞ Pulveris ipecac et opii..... } ....aa 3ss. (2.0)
Camphoræ monobromati.. }
Misce. Et fiat caps. No. x. Sig. One capsule, q. half hour until relieved.

The Treatment of Ozena.—The treatment of this very troublesome affection has given rise to many therapeutic combinations, which, being tried, were found to be more or less wanting: Camphor, iodoform, formol, thymol, menthol, etc., were recommended and are still used, but a permanent cure is difficult to obtain, many factors entering into the nature of the affection. Dr. Bobone claims to have obtained great success with the use of petroleum, which he considers in the dual point of view as a bactericide and a stimulant. The solution he uses is as follows:

℞ Refined petroleum.....1½ oz.
Nitrate of strychnine..... ½ gr.
Oil of eucalyptus..... 1 drop.

After antiseptic irrigation of the nasal cavities to remove all secretion, a piece of cotton wool steeped in the solution is applied by means of a stylet to all the surface of the fossæ once a day. In a short time all offensive odor disappears, and the mucous lining assumes a healthy appearance.

Another effective treatment consists in insufflation of the following powder:

℞ Collargol.....10 grs.
Sugar of milk..... 3 drs.

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THE X-RAYS AND STERILITY.

AFTER the preliminary period of extreme hopefulness concerning the beneficial therapeutic effects that might be expected from the X-rays following their original introduction, there has come such a decided reaction that we almost hesitate to credit the latest developments as to their possibilities for working insidious harm. We suggested editorially some weeks ago (see MEDICAL NEWS, January 7, 1905, page 31) in treating of the subject of the production of cancer in X-ray burns, that it must be constantly kept in mind that in this agent we have to deal with an extremely powerful physical energy, the knowledge of whose limitations is as yet only very vague and the possibilities of whose influence are quite beyond our ken. The X-rays have been a constant source of surprise, and the latest reported development is likely to add to this feeling.

At the last (January) meeting of the section on Genito-Urinary Diseases of the New York Academy of Medicine, a series of observations with regard to the sexual condition of physicians and patients who have been exposed to the X-rays was made by F. Tilden Brown, who makes the following communication to the MEDICAL NEWS:

"He had to announce that men by their mere presence in an X-ray atmosphere, incidental to radiography or the therapeutic uses of the rays, after a period of time—as yet undetermined—will be rendered sterile. In the last few days ten individuals who have devoted more or less time to the work during the past three years—none of whom have had any venereal disease or traumatism involving the genital tract—have been found to be the subjects of absolute azoospermia. None of the number are conscious, however, of any change or deterioration in regard to their potency."

This change had been brought about absolutely without any warning. There had been no sign of lack of sexual potency, or there probably would have been reports made along this line before, as it is only almost by accident that the present series of observations was begun. In one reported case a patient treated by the X-rays for pruritus ani was known to have active spermatozoa before exposure to the X-rays, but these disappeared after the treatment, and for several months no signs of spermatozoa could be found. There was, however, after some three months, a gradual return to the normal, and active spermatozoa could again be discovered.

This effect of the X-rays may seem surprising to those who are unfamiliar with some of the biological effects that have been known to occur as the result of the exposure of lower organisms of various kinds to the action of these radiations. Seeds, for instance, exposed for even a few hours to the action of the X-rays lose something of their ability to grow, and if planted alongside of control seeds which have not been exposed, the shoots to which they give rise may be readily picked out, because of the slowness with which they increase in size. On the other hand, exposure for a number of hours is likely to kill the seeds entirely. In general, the longer the exposure the more does the vitality of the seed suffer. Furthermore, a series of apparently sound observations have been made upon insects which usually undergo complete metamorphosis in their ordinary life cycle. If the larvæ of some beetles be exposed to the X-rays for a short time, they are not killed, but some curious vital change takes place in the tissues. The meal worm, for instance, will, after a certain number of days under ordinary circumstances become a beetle. After exposure to the X-rays, however, this normal metamorphosis does not take place, but the meal worm continues to live and eat and thrive without any tendency to go through the rest of its cycle of existence until death finally overtakes it. These "Methusalah" meal worms,

as they have been called, will still be in the worm stage long after their brothers or sisters have passed through the beetle stage, laid eggs which in turn have become meal worms and then beetles, and so on for several generations.

With these facts in mind, it is not a matter for surprise that some serious influence should be exerted upon the reproductive tissues of human beings. It is of course extremely gratifying to learn that the change produced is probably not permanent. There must, however, be an uncomfortable feeling in those who have for a considerable period been indulging in the habit of using the X-rays freely. It seems not unlikely that carefully constructed protecting shields of metal may have to be invented and be constantly worn in order to prevent this unpleasant and undesirable consequence of a scientific application. In the meantime the observations made in New York will have to be confirmed in other parts of the country, and it may perhaps turn out that the question is not quite so serious as it seems to be at first sight. It is possible that some accidental circumstance has given rise to an unfortunate inference not quite justified by the actual circumstances in the cases, although the observations have apparently been made with great care and the report is not sensational, but, on the contrary, seems eminently conservative.

RECENT WORK IN CYSTINURIA.

Since Baumann and v. Udranszky first discovered the presence of putrescin and cadaverin in a cystinuric individual, the association of diaminuria with cystinuria has been repeatedly observed, and various attempts have been made to establish a casual relationship between the two conditions.

As diamins were then only known to be formed as the result of putrefactive changes the idea naturally suggested itself that the diaminuria might possibly be the expression of a specific intestinal mycosis, and that the cystinuria in turn was the outcome of an auto-intoxication referable to the intestinal infection. Against this hypothesis various objections have from time to time been raised. It was thus pointed out that putrescin and cadaverin are not always found together; that the quantity of diamins in the urine is sometimes much greater than the amount present in the feces; that one ptomain may be present in the urine, while the other is found in the stool. Cammidge and Garrod, moreover, were totally unable to isolate any diamins from bouillon cultures of micro-organisms which they had isolated from their patient's feces. Besides it has been conclusively established that diaminuria is not necessarily an accompaniment of cystinuria. Reasons enough therefore existed which could lead one to doubt the validity of Baumann's hypothesis.

A few years ago Simon pointed out another possible source of the ptomains. He indicated the close relationship which exists between arginin and pûtrescin, and suggested the possibility that the diamins in question might be derived from the body tissues. According to his ideas the diaminuria and cystinuria were merely correlated, and both the expression of a specific metabolic abnormality. This view was based upon the observations of Kossel and his pupils that the so-called hexon bases are essential components of the albuminous molecule and that arginin can be readily decomposed into urea and ornithin. This latter in turn could give rise to putrescin by loss of carbon dioxide. For cadaverin he similarly suggested lysin as a probable source. That putrescin and cadaverin may actually be derived from arginin and lysin respectively was then shown by Ellinger, who effected the transformation by means of putrefactive organisms. This of course furnished no proof that the same change could take place in the animal organism. It was rendered probable, however, by the observation of Emerson, who noted a fermentative splitting off of CO_2 in the case of tyrosin, during pancreatic autolysis, with the formation of oxyphenylethylamin.

But the strongest support of Simon's hypothesis has been recently furnished by Loewy and Neuberg. These observers have shown that following the ingestion of arginin and lysin by a cystinuric individual the corresponding diamins appear in the urine. The mechanism by which this transformation is effected has not as yet been worked out, but there can hardly be any doubt that ferment action is responsible for the process. Kossel has indeed shown that a ferment exists, which he terms arginase, and which is capable of effecting the cleavage of arginin into urea and ornithin.

In view of these facts the tissue origin of the urinary ptomains in cases of cystinuria can scarcely be doubted, and one of the numerous experimental problems which have suggested themselves in connection with the subject of cystinuria has thus found a satisfactory solution. Incidentally, however, additional problems have

arisen, for Loewy and Neuberg have shown that the metabolic insufficiency in cystinuric individuals is not limited to the phenomena of cystinuria and diaminuria, but that it extends to still other components of the albuminous molecule. They were able to demonstrate the remarkable fact that the ingestion of some of the common monoamido acids which result on proteolytic digestion of albumins, such as leucin, tyrosin and asparaginic acid, leads to the elimination of these bodies in the urine, while in the normal individual they are completely oxidized to carbon dioxide and ammonia; viz., urea. This seems the more remarkable, if we consider that the cystinuric patient does not eliminate such products under ordinary conditions, for barring the findings of Conti and Moreigne, which are probably referable to faulty technic, no amido acids have ever been encountered in the urine of such individuals.

Still another finding which was likewise not suspected is recorded by the same observers: Neuberg and Meyer had pointed out a little over a year ago that the cystin entering into the composition of cystin calculi is not identical with the cystin obtained on hydrolysis of albuminous material, and hence not with the cystin which is found in solution in the cystinuric urine. The products, however, are isomeric. The albuminous cystin is an α-amino-β thio propionic acid, while the calculus product is α-thio-β-amino propionic acid. This fact is in itself remarkable, if we consider that the calculus cystin is unquestionably of albuminous origin and primarily no doubt has its amino- and thio-groups in the same positions as in the albuminous product. Very curiously the cystinuric organism is capable of oxidizing this anomalous form of cystin just as well apparently as the normal individual can oxidize the albuminous product, while the latter is almost quantitatively eliminated by the cystinuric. We thus have an analogous condition to what is known to occur in diabetes, where the body is apparently quite well able to oxidize levulose, while dextrose escapes in the urine.

These various observations open up entirely new avenues of investigation into the general subject of metabolism, and lend still further interest to an already most interesting problem.

THE BECOMING NOTION OF PROTOPLASM.

WHILE various biologists are disputing more or less actively about the morphological structure of bioplasm, the physical basis of life, two sciences, physics and chemistry, not so distinct as formerly, are suggesting ideas as to its molecular composition or arrangement which, although vague as yet, have much interest. The reason for this better development of our knowledge of the ultra-visual structure over that of the formations which can be seen through the microscope lies both in the increasing facility in chemical analysis of at least the materials and the end-products of protoplasm and in the uncertainty of our present microscopical methods, which will seem very crude to the eyes of our children! Where something is vaguely seen, as in the nucleus of a nerve-cell, each man sees not what his eyes but what his brain perceives, and so each one sees more or less differently, but chemico-physically there is no seeing at all and one *guesses* at how that which he knows is present is arranged! Perhaps there is not much to choose between the products of these two methods after all. But at any rate our present topic is the probable structure of the molecule or unit-cluster of protoplasm without reference to the morphological theories. In lieu of facts a plausible and likely hypothesis often underlies not only knowledge but real scientific progress.

It is only necessary to suggest the quite unlimited latencies inherent in a human male pronucleus or even in an entire ovum to prove that protoplasm, whatever its molecular plan, is the most marvelous of substances this cooling whirl of burning matter has so far evolved. Only the biochemist endowed with an imagination really appreciates its unique complexity, and he only vaguely from recently gained knowledge as to the metabolic processes which occur within it.

The unit-cluster of protoplasm may apparently be conceived as a group composed of molecules of proteid, fat, carbohydrate, water, and salts, elsewhere called inorganic, arranged in some sort of characteristic relation to each other. Proteid molecules consist of from two or three hundred to two thousand or so atoms according to its variety, these being atoms of carbon, hydrogen, oxygen, nitrogen and sulphur, and oftentimes of phosphorus in addition. How these many hundreds of atoms are grouped is quite unknown, but loosely at all events, so that the instability of the substance is extreme, and in some way or other quite characteristic of life, for while living biogen is protoplasm surely enough, dead biogen is only lean meat, a very different substance chemically. This proteid molecule, huge and loosely built, with a host of interactions ever going on

within itself, forms apparently the nucleus of the protoplasmic unit-cluster, and by far its greater mass.

The relation of the molecules of water to the proteid molecule is much in doubt, yet it constitutes an average of three-quarters of different sorts of differentiated protoplasm. Whether the aquatic groups of atoms are part and parcel of the proteid group or only in relation to it is still unknown. As for the so-called inorganic salts (a misnomer, since here they are organic in the extreme) there is still less knowledge, for we do not know even exactly what the salts are. Again, whether they are arranged as molecules or as dissociated ions is uncertain, the recent presumptions being, however, in favor of the ions. Whether these atoms are in relation with elements of the proteid and the water is another problem to be solved. Calcium, sodium, and iron seem to be always present, as well as potassium, magnesium, and chlorine, while excellent French chemists as well as work done in America go to prove that arsenic is an invariable constituent of biogen.

As for the fat and carbohydrate there is now little doubt that both are present in small amounts in every particle of (living) protoplasm, but whether in constant varieties or in variable forms, whether lecithin for example is always concerned, is again uncertain. But these in themselves are highly complex bodies, consisting of very many atoms, and their relations to the proteid "molecule," to the inorganic salts, and to the water, form at present subject for much all too idle speculation.

Whatever the exact interconnections of all these in themselves highly complex groups of atoms, one fact is tolerably patent and of great importance, namely, that they all, and probably their constituents in turn, are endlessly in the most intricate of interaction, and that not only intrinsically but extrinsically, with the more or less similar groups of substances or of atoms brought to them as nutriment. This self-adjusting system of intrinsic and extrinsic interaction constitutes metabolism, destructive and constructive.

But the depths of this living matter are not yet reached! No longer can we say and try to believe that the perhaps thousands of atoms of more than a dozen sorts, which must group themselves so almost fantastically to produce a single unit-cluster of protoplasm, are spherical masses of something we call "matter" all of the same size but of different weights. Nor can we claim, as most scientists would have claimed a few years ago, that all these multiform interactions are conducted on the strictest principle of the conservation of energy, once bulwark of all our reckonings. To discuss shape in relation to the ultimate unit of "matter" is already out of the fitness of recent things, and we must substitute for the imaginable atom something of the nature of a vortex of forces, or of a force with protean aspects to our phenomenalizing senses. And while the conservation of energy probably is valid for material reactions generally, the notion has certainly lost its former air of certainty and reliability since radio-activity upset the ancient law. It will trouble a man to say where the exception does *not* come, it will trouble the biologist especially to demonstrate that no exception to the law holds sway within his own domain in the stupendous "continual adjustment" we designate as life, the ceaseless interactions within and between the most intricate structures man's knowledge has so far bid him imagine.

ECHOES AND NEWS.

NEW YORK.

New York Skin and Cancer Hospital.—Dr. Bulkley's usual clinical lecture at the New York Skin and Cancer Hospital will be replaced on Wednesday, February 1, by a lecture by Dr. Boleslaw Lapowski, on the "Treatment of Syphilis," and on Wednesday, February 8, by a lecture by Dr. Charles Mallory Williams on the "Treatment of Acne."

Medical Society of the County of New York.—At a stated meeting of this Society, held December 27, 1904, the following resolution was *unanimously* adopted: "That in any directory or list other than a medical one, it is undesirable that any data should appear other than the name, address and telephone number, and that the use of more prominent type for one name than another, is to be severly deprecated."

Century Mark for Wm. Wood & Co.—Few publishing houses in this country can boast a century of existence. In an interesting brochure before us, Messrs. William Wood & Company, of New York, trace the history of their establishment from 1804, when it was founded by Mr. Samuel Wood, to the present time, the firm now consisting of the founder's grandson, Mr. William H. S. Wood, and his three sons. During this period many monumental works have been published by them, notably Ziemssen's "Cyclopedia of the Practice of Medicine," in twenty-two royal octavo volumes, and the "Twentieth Century Practice of Medicine," in twenty volumes, edited by Dr. T. L. Stedman, completed in 1901. The little brochure is published with portraits of the founder and subsequent members of the firm, affording an interesting comparison in costume and personal appearance between 1804 and 1904.

Appointment of Dr. Farrand.—Dr. Livingston Farrand, professor of anthropology at Columbia University, has been named as head fo the National Association for the Study and Prevention of Tubercu-

losis. In making the announcement, *Charities* describes the appointment as signal evidence of the draft which the greater social movements of the day are making upon the largest resources of the universities. Dr. Farrand is at present an authority on the American Indian. As assistant curator of the American Museum of Natural History, New York, he was associated with Franz Boas in 1897 in organizing the famous Jesup North Pole Expedition, which made a study of the earliest peoples in Northwestern America and Eastern Asia. Prof. Farrand has been secretary of the Psychological Association since 1896, president of the American Folklore Society, recording secretary of the American Ethnological Society, and a member of the American Society of Naturalists, American Society for the Advancement of Science, the Washington Academy of Science, the American Anthropological Association, and the New York Academy of Science.

State Charities Report.—The annual report of the State Board of Charities, made public last week, contains recommendations for general legislation and for specific appropriations for the State charitable and reformatory institutions subject to the visitation and inspection of the State Board of Charities. After giving a list of the fourteen State charitable institutions which are subject to the visitation and inspection of the board, the report says: The board desires to renew the following recommendations for legislation: (1) That all the special appropriations to enlarge or improve the State institutions within the jurisdiction of the board be included in one bill, with such provisions as will insure in every instance the most careful and economical expenditure of the moneys appropriated, in exact accordance with the intentions of the legislature. (2) That the House of Refuge on Randall's Island be reorganized as a State institution with managers appointed by the governor and confirmed by the Senate. The board also recommends that the appointment of employees at this institution be made in accordance with the rules of the State Civil Service, if practicable. (3) That the State Custodial Asylum for Feeble-Minded Women at Newark and the Rome State Custodial Asylum at Rome be enlarged so as to enable them to receive all the feeble-minded and idiotic persons now retained in almshouses contrary to the provisions of the Poor law and the Penal Code, or provided for in private institutions at greatly enlarged cost to the various counties, cities, and towns of the State, and the adult feeble-minded now improperly retained at the Syracuse State Institution for Feeble-Minded Children.

Sydenham Hospital.—The newly elected Board of Directors of the Sydenham Hospital, located on East One Hundred and Sixteenth Street, has just received for hospital purposes as a New Year gift, from Isaac Guggenheim, the Treasurer of the American Smelting & Refining Company, $1,000. Mr. Guggenheim has also made a generous offer to further aid the hospital and its training school by giving monthly an amount of money equal to such sums as the Board of Directors succeed in raising each month, through donations or voluntary contributions. This offer holds good up to the sum of $10,000 a year, should the directors raise a like amount. The recent benefit entertainment at the New York Theater netted the sum of $1,500 for the Sydenham Hospital. Announcement of Mr. Guggenheim's liberal offer and also the result of the theatrical benefit was made known to the Sydenham Directors at their meeting last Monday evening. The Sydenham Hospital was started two years ago and has been very successful. At first only one building was used for its dispensary, but the work and the needs of the hospital grew so very rapidly that to-day three buildings are thoroughly equipped for this purpose. After May next, the two adjoining buildings will be added to the hospital plant in order to provide more room for nurses and private patients, and when complete the hospital will occupy five buildings, Nos. 339 to 347 East One Hundred and Sixteenth Street. The last report of the hospital shows that more than ten thousand treatments were given at the hospital dispensary during the past year, and six thousand hospital days were free in the hospital. The congested population in this part of the city has attracted the attention of Mr. Guggenheim and other members of the Board to the absolute necessity of an institution of this character in this quarter of the city, and for this reason Mr. Guggenheim's munificent gift is gratefully received by the hospital, and the directors are now hard at work attempting to raise sufficient funds to take advantage of Mr. Guggenheim's offer. William I. Spiegelberg, a son-in-law of Isaac Guggenheim, is President of the hospital. Lewis M. Bloomingdale, of 78 Fifth Avenue, is the Treasurer and Sanford Simons is Secretary. Among the Directors are Joseph P. Day, who is Vice-president; Samuel Strasbourger, Isaac Guggenheim, N. Taylor Philips and William Bretter.

Does Medical Education Deserve Recognition—In reply to this question the New York *Sun* honors itself and the profession in the following editorial comment from a recent issue:

"Medical science gave vaccination to mankind. This single discovery has caused practically to disappear from the earth one of the greatest scourges of the human race. It has saved countless millions of human beings from the sufferings of a most loathsome disease, which killed the majority of those attacked and left those who recovered from it disfigured for life.

"Within recent years, by the discovery of the source of infection in yellow fever, it has removed from the list of epidemics this dread disease, which formerly spread death and disaster in its tracks, closed our great shipping ports for months at a time, and in addition to the awful suffering and sacrifice of life caused the loss of millions of dollars to the commercial interests of the world.

"In the discovery of the germ theory of disease, if viewed only in its application to one single malady, diphtheria, formerly so destructive to children, now not only preventable, but when acquired curable practically in all cases by the simple injection under the skin of Behring's serum, medical science gave to mankind something of a value which cannot be estimated in dollars and cents. In the logical development of this theory the best minds of the profession believe that the time is not far distant when every disease will be subject to serum therapy.

"In surgery the demonstration of the aseptic and antiseptic method has done as much as vaccination in the amelioration of suffering and the prolongation of life. The operation of ovariotomy and the abdominal operations in both sexes which followed McDowell's initiative and the development of the science of gynecology due to the genius of Marion Sims have added millions of years to the sum of life and saved hundreds of thousands of human beings from untimely death.

"These are but a few examples of what medical science has done for mankind. They are the fruits of a higher and broadening education.

"Last month we expressed regret that the city of New York was not the medical center of the United States; that in spite of its vast preponderance in population and its financial standing as the first city of the Western Hemisphere it was outstripped by two or three cities of smaller size, for the reason that they, through their State or municipal Governments, or by the aid of wealthy philanthropists, gave largely to the support of medical schools.

"At that time, writing on the practical education of graduates in medicine, we submitted a synopsis of an address by the president of the medical faculty of one of our educational institutions, the New York Polyclinic Medical School and Hospital, showing the work done by that institution for the twenty-two years of its existence, and concluding with the expressed conviction that such an institution deserved recognition by this community and perpetuation by endowment. We are glad to know that since the appearance of that article there seems to be an awakening interest in medical education in New York, and that this institution has just received substantial contributions from different sources which have enabled it almost entirely to cancel in so short a space of time a large mortgaged indebtedness.

"One of the contributors, a business man of large affairs, thoroughly acquainted with the management of the Polyclinic, referring to the president's report, said:

"'The extraordinary record you were able on that occasion to lay before us, showing the results of the years of effort devoted by you and the medical staff so unselfishly to this noble and beneficent plan for giving the most arvanced medical and surgical teaching and clinical demonstration to physicians unable otherwise to obtain such practical instruction, together with the benefits of the very best treatment and care gratuitously given those of the sick and helpless poor, should prove beyond all question the usefulness of such a combined school and hospital and its just claims for the consideration and aid of all interested in the higher education and training of the members of the medical profession.'

"When we bear in mind what medicine has done for the world we may wonder that in the absence of individual philanthropy our State and municipal Governments have not long since discovered that medical education deserves a wider recognition."

Medical Society of the State of New York.—The Ninety-ninth Annual Meeting of this society will be held at the City Hall, in Albany, January 31, February 1, 2, 1905. After the President's Inaugural Address, and the customary reports of the several committees the following papers will be read and discussed: Dermatitis Seborrhoica and its Relation to Alopecia, and other Conditions, by L. Duncan Bulkley, of New York; To What Extent are Cycloplegics Necessary in Determining the Refraction of the Eye and in the Prescribing of Lenses, by Frank Van Fleet, of New York; Rheumatism and the Eye Muscles, by Francis Valk, of New York; Loss of Vision from Disuse of the Eye (Amblyopia ex Anopsia), by D. B. St. John Roosa, of New York; The Simulation of Appendicitis by Cholelithiasis, by George G. Lempe, of Albany; Biliary Drainage in Operations on the Gall Bladder and Biliary Ducts, by Eugene A. Smith, of Buffalo; Report of a Case of Vasomotor Disturbance Caused by Exposure to Sunlight, by Samuel B. Ward, of Albany; Report of a Case of Angioneurotic Edema, by Clayton K. Haskell, of Bath; The Status of Suprarenal Therapy, by Samuel Floersheim, of New York; Aortitis, by Thomas E. Satterthwaite, of New York; The Antitoxin Laboratory, by Herbert D. Pease, of Albany; Recognition of Incipient Pulmonary Tuberculosis, by John H. Pryor, of Ray Brook, Essex Co.; Phosphaturia, by James Pederson, of New York; Pathology and Bacteriology of Cerebrospinal Meningitis, by W. T. Councilman, of Boston; Symptomatology and Diagnosis, by H. L. Elsner, of Syracuse; The History of Cerebrospinal Meningitis in America, by Abraham Jacobi, of New York; The Treatment of Cerebrospinal Meningitis, by C. G. Stockton, of Buffalo; The Eye Symptoms of Cerebrospinal Meningitis, by A. E. Davis, of New York; Address, by Dr. Charles Harrington, Secretary State Board of Health of Massachusetts, of Boston, Mass; President's Address, by Hamilton D. Wey, of Elmira; The Correction of Nasal Deformities by Subcutaneous Operation, by John O. Roe, of Rochester; The Middle Turbinate in Diseases of the Accessory Sinuses, by W. J. Stucky, of Lexington, Ky.; Inferior Turbinated Bone, its Function, Diseases and Treatment, by Wendell C. Phillips, of New York; Treatment of Chronic Otitis Media, with Illustrative Cases, by W. Sohier Bryant, of New York; The Family Physician, by Robert P. Bush, of Horseheads; The Various Methods of Opening the Skull for the Removal of Tumors of the Brain, by Charles H. Frazier, of Philadelphia; Railway Spine, by Edward B. Angell, of Rochester; Report of two cases of Gastrectomy, with exhibition of patients, by Willis G. Macdonald, of Albany; The Relation of Pelvic Conditions to Nervous Disorders, by A. L. Beahan, of Canandaigua; The Non-Sequitur in Medicine, by H. A. Fairbairn, of Brooklyn; Poisoning by Potassium Bichromate, by Francis Eustace Fronczak, of Buffalo; The Etiology of Hypertrophied Prostate, by L. Bolton Bangs, New York; Some Observations on the Technic of Perineal Prostatectomy, by George R. Fowler, Brooklyn; Personal Experience in Prostatic Surgery during the Last Two Years, by Willy Meyer, New York; Suprapubic Prostatectomy, by Howard Lilienthal, New York; Prostatism, without Prostatic Enlargement, its Diagnosis and Treatment, by Charles H. Chetwood, New York; Has the Catheter a Place in the Treatment of Chronic Prostatic Hypertrophy, by Paul Thorndike, of Boston; Conservative Perineal Prostatectomy; Results of Two Years' Experience, by Hugh H. Young, of Baltimore; A Paper (title to be announced), by Francis S. Watson, of Boston; Concerning the Treatment of Infantile Marasmus, by Heinrich Stern, of New York; Researches on the Blood of Epileptics, by B. Onuf and Horace L. Grasse, of Sonyea; Three Unusual Cases of Aneurism, by W. C. Krauss, of Buffalo; A Few Thoughts Regarding Our Work, by H. A. Gates, of Delhi; A Case of Extensive Carcinoma of Tongue and Neck, Presenting Points of Special Interest, by William Seaman Bainbridge, of New York; Prophylaxis in Pregnancy and Labor, by T. Avery Rogers, of Plattsburgh.

PHILADELPHIA.

Medical Notes and Queries.—This is the title of a new periodical to be issued ten times a year for $1.00. It is edited by Dr. Henry W. Cattell, of Philadelphia, and is to be devoted to the "practical side of medicine but from a scientific standpoint." May success crown the editor's efforts is our hearty wish.

Teachers Institute Postponed.—Owing to an epidemic of scarlet fever in the vicinity the local teacher's institute, which embraces Worcester, Perkiomen, Skippack township and Schwenksville borough, had to be postponed until next March. The outbreak occurred in the Sholl School, which has been quarantined.

To Prevent the Use of Poisonous Embalming Fluids.—District Attorney Bell and Coroner Dugan are preparing a bill to be introduced into the legislature making it illegal for undertakers to use poisonous fluids for embalming. They say such a measure would do away with the defense usually put up in murder trials where poisoning is suspected.

Charitable Bequests.—The executors of the estate of Selina Walker will distribute in accordance with the adjudication of the estate which has been made by Judge Hanna, of the Orphan's Court, the following: Jewish Foster Home and Orphan Asylum, $9,965.64; Jewish Hospital Association, $7,286.73; United Hebrew Charities, $7,286.73; and Jewis Maternity Hospital, $2,428.90.

Fear an Epidemic of Disease.—The residents of the suburbs and outlying sections of the city are circulating a petition to call the attention of the Bureau of Street Cleaning to the fact that in some of the suburbs the streets have not been cleaned since December 1, 1904, and that the garbage has been collected but twice in three months. Because of the foul odors emitted from the decaying material the residents fear the outbreak of disease.

Children's Homeopathic Hospital.—At the twenty-seventh annual meeting of this hospital corporation Alfred E. Burk was elected President, Dr. Augustus Korndörfer Vice-president, Dr. Walter Strang Secretary, and Joseph Clark, Treasurer. In order to meet the increasing demand for room, plans were formulated to build a new north wing to the hospital. Last year 22,464 patients were treated in all the departments at a total expense of $46,991.01.

Resigned.—At a meeting of the Board of Managers of the Wistar Institute the resignation of Dr. Horace Jayne was unanimously accepted. The Board of Managers were reluctant to take the step, but they agreed with Dr. Jayne that the resources of the institution were insufficient to pay his salary. Dr. Milton J. Greenman was elected to fill the position of director. The position of assistant director will be abolished, which will cut down the expenses $5,000 a year.

New Hospital Quarters.—To meet their increasing needs St. Luke's Homeopathic Hospital bought the home of Dr. John B. Mayer, at the corner of Broad and Wingohocken streets, and transformed it into a hospital. The opening was attended by many physicians, visitors and members of the Board of Trustees. In the new hospital there are eight beds in the male ward, six in the female, six in the childrens, five in the male private ward and five in the female private ward. In the accident room three beds are provided.

Appropriations.—The State Board of Charities will send to the legislature its biennial report recommending $9,406,923.75 to be appropriated to State, semi-State and private institutions in Pennsylvania, for the years 1905-6. Of this amount $7,227,804.10 shall be applied for maintenance and $2,179,119.65 for buildings. The board suggest that if the State finances should not warrant the appropriations of the various amounts recommended, their reduction should be made proportionately and the State institutions and the items of maintenance should be given preference.

Radium in the Sun.—In a paper read before the American Philosophical Society Prof. Snyder, of the Philadelphia Observatory, announces that his experiments with the spectroscope upon the sun, stars and nebula have shown that all these bodies contain radium and that the presence of this element accounts for many heretofore inexplicable phenomena of the heavens, particularly in the sun as the origin of celestial energy. He was inspired to his investigation by discovering that the spectrum lines of radium were identical with the spectrum lines of the corona of the sun and later of the stellar nebulæ.

Appointments.—William B. Hackenburg, president of the Jewish Hospital, announced the following appointments: Dr. Charles P. Noble, consulting surgeon; Dr. Lawrence F. Flick, consulting physician; Dr. William H. Randle, obstetrician; Dr. J. B. Potsdamer, pediatrist; Dr. Sidney L. Feldstein, radiologist. A number of resident physicians have been added to the staff. Dr. Francis D. Patterson has been elected surgeon to the Howard Hospital to fill the vacancy caused by the resignation of Dr. Charles H. Frazier. Mr. H. H. Meller has been elected secretary to the Medical Faculty of the University of Pennsylvania.

Medico-Chirurgical Alumni.—At the meeting of this almuni the following officers were elected: President, William L. Shindle, M.D.; Secretary, Stillwell C. Burns, M.D.; Treasurer, Emanuel S. Gans, M.D.; Executive Committee, Drs. W. E. Ashton, A. E. Blackburn, A. C. Buckley, L. N. Boston, J. A. Cramp, J. W. Croskey, M. P. Dickson, J. H. Egan, L. Webster Fox, Andrew Godfrey, C. H. Gubbins, S. L. Gans, A. W. Hammer, W. F. Hähnlen, H. Löwenburg, F. Lammer, J. A. McGlinn, J. A. McKenna, G. W. Pfromm, J. V. C. Roberts, H. J. Smith, J. V. Schoemaker, M. P. Warmuth, J. W. Wilkins, J. L. Widmyer.

Phipps Institute Course of Lectures.—Dr. A. P. Francine delivered an illustrated lecture on the "Care and Treatment of Consumptive Patients" to the Pittsburg Nurses' Association last week. Dr. D. J. McCarthy spoke on the subject of tuberculosis at the Deaconesses' Home, 611 Vine Street, January 23. Dr. Horace Carncross gave an illustrated lecture to the Glassblowers' Union of New Jersey, at Woodbury, January 27, and upon the following evening Dr. Ward delivered a lecture to the textile workers upon the "Prevention and Home Treatment of Tuberculosis." On the evening of February 2 Dr. D. J. McCarthy will speak upon the general subject of tuberculosis.

Tuberculosis in Pennsylvania.—The following resolutions were adopted by the Philadelphia County Medical Society at a business meeting held January 18, 1905:

WHEREAS, The State of Pennsylvania has not, up to the present time, provided adequate accommodation for the care and treatment of its tuberculous sick; and

Whereas, The plans now in projection throughout the State, even when succesfully executed, will provide for but a mere fraction of the number of those who need skilful care and medical direction, both for the saving of their lives and the protection of the community; and

Whereas, Experience has shown that by properly directed open air treatment the great majority of cases of incipient tuberculosis can be permanently cured, and that a large percentage of the daily new infections can be avoided if such patients are removed from close association with others not yet infected; be it

Resolved, That the Philadelphia County Medical Society does hereby petition the Legislature of the State of Pennsylvania; (1) for the appropriation of a certain sum of money, not less than $500,000 to be devoted to the establishment of camps, sanatoria, hospitals and dispensaries, for the tuberculous sick of the commonwealth of Pennsylvania; (2) for the setting aside of such portions of the State Forestry Reserve as may be recommended with a view to accommodate camps and buildings such as may be deemed necessary for the care of tuberculous patients, and for their scientific study and treatment, further, be it

Resolved, That the President of this Society be authorized and instructed to appoint a committee of three from the membership of the Society, to cooperate with similar committees that may be appointed from other societies in urging upon the legislature the need of State aid in the suppression of tuberculosis.

Single Service Paper Milk Bottle.—When informed that a paper milk bottle was placed upon the market A. H. Stewart, of the Bacteriological Department, Philadelphia Bureau of Health, obtained several bottles to determine their efficiency. The bottles are made in three sizes, quart, pint and half-pint; they are conical in shape and made of heavy spruce wood fiber of three-ply thickness. The bottom is made of heavy pasteboard and the edges are so locked that pressure upon the upper or upon the under surface merely serves to lock it more tightly in position. A downward pressure of two hundred pounds is not sufficient to collapse the bottle. The lid is made of heavy pasteboard and fits in the lumen of the bottle by a surface contact of about one-half inch, with protruding lips, to enable its ready removal. The bottles are placed in paraffin bath at 100 C. for one-half minute and then transferred to a hot chamber which removes the excess of the paraffin and facilitates penetration. The paraffin coating strengthens the bottle, prevents the imparting of the woody taste to the milk and also sterilizes it. He placed 25 c.c. of sterile water in several bottles, shook them thoroughly and then allowed them to stand for one-half hour when plates were inoculated from the water but no colonies developed. He then sent closed glass and paper bottles to several dairies in the city. When the milk was received at the laboratory the glass bottles invariable showed slight evidence of leakage while the paper bottles did not. The bacteriological examination of the sets showed that the milk in the paper bottles contained about one-fourth as many bacteria as the glass bottles. The milk was also found to remain sweet longer in the paper bottles than in the glass. The paper bottles can be made for about one cent a piece, so that after they have been used once they can be thrown away without materially adding to the cost of the milk. By so doing there is less danger of carrying disease.

CHICAGO.

Dr. Christopher Improving.—Dr. Walter S. Christopher, the eminent pediatrician, who, for several months, has been seriously ill, is reported to be improving rapidly, and hopes are entertained for his recovery.

Hospital for Oak Park.—A $100,000 hospital has been projected for Oak Park. Subscriptions will not be opened until the architects finish their plans and take bids. The incorporated hospital association has selected a six acre site.

New Medical Ward at County Hospital.—A new medical ward, with 100 beds, will soon be opened at the County Hospital as a result of the action by the public service committee. This committee concurred in the report of the hospital committee that the old ward for contagious diseases at the County Hospital be changed to a medical ward. The contagious disease patients are now taken to the new hospital for contagious diseases. The alterations will cost about $4,000.

Exiled from Glen Ellyn.—Dr. O. E. Miller, owner and manager of Ruskin "University," and reputed proprietor and head physician of a sanitarium for the cure of inebriates and drug victims, has been ejected from the village of Glen Ellyn. He appeared before Justice J. F. Higley recently to answer charges brought against him by the village board of running an institution in violation of the village ordinance. He pleaded guilty and was fined $100, and given ten days in which to close the affairs of the "university," and leave the place.

Passavant Hospital Improvements.—To enlarge the institution, the Passavant Hospital Auxiliary Association has been incorporated, with James H. Eckels, President; Arthur L. Farwell, Treasurer; Arthur B. Wells, Secretary. The first gift to the new association is the lot and building to the west of the present hospital, which was given by O. B. Green. As soon as the building can be remodeled it will be used for hospital purposes. The new association hopes to raise $50,000 with which to build an addition to the present main building.

Hospitals in Residence Districts.—After full consideration, the City Council Health Committee has voted against recommending the ordinance permitting the construction of a free hospital in the block facing Washington Park, between Fifty-third and Fifty-fourth streets. The institution in question is designed for the treatment of contagious diseases of children. Under the ordinance now in effect the projectors of the hospital are required to secure a majority of the frontage consents, not only on the four sides of the block involved, but on the four sides of the four blocks adjacent. The ordinance upon which the health committee has just taken action proposed to amend this measure so as to require only the frontage consents representing the four sides of the block involved. The Chicago *Daily Tribune* remarks that "The hospital project in question is a most worthy philanthropy, deserving of hearty support. To place such an institution in a residence neighborhood, however, depriving the people living near it in large measure of their right to a voice in the matter, is contrary to public interests and to the principle of home rule in neighborhood affairs."

Illinois State Asociation for the Prevention of Tuberculosis.—This Association was organized permanently on the evening of January 19, marking the beginning of a new era in fighting tuberculosis. The general object of the association is to prevent the prevalence of consumption and other forms of tuberculosis in Illinois. Two specific objects are admittedly in the minds of those who are most prominently affiliated with it—to obtain from the legislature an appropriation of $250,000 with which to build a State sanitarium, and the enactment of a law compelling the registration of all tuberculosis sufferers in the State. The following officers were elected: Honorary President, the Governor of Illinois; President, Edmund J. James, President of the University of Illinois; Treasurer, James H. Eckels; Secretary, Dr. Arnold C. Klebs; Legal Adviser, Charles H. Hamill; Executive Committee, E. P. Bicknell, Dr. Wm. E. Quine, Dr. J. W. Pettit, Dr. Geo. W. Webster, and Sherman C. Kingsley; Central Committee, Dr. Wm. E. Quine, Dr. Frank Billings, Dr. N. S. Davis, Dr. E. P. Bicknell, Dr. Joseph E. Milligan, Dr. N. B. Delamater, Dr. N. H. Graves, Dr. Geo. W. Webster, Dr W. A. Evans, and Dr. Robert Babcock. Any

city or county interested in the combating of tuberculosis may be affiliated with the association upon application to the Central Council. The dues are $1 annually. The organization of the association was inspired by the Visiting Nurses' Association, under the direction of Dr. Arnold C. Klebs. A meeting of representatives of the various medical and philanthropic societies of the State was held a month ago at the Great Northern Hotel, and the committee appointed which drew up the Constitution and By-Laws accepted at the meeting of January 19.

GENERAL.

Monument to Virchow.—The city of Berlin offers three prizes for the best plans for a monument to the late Professor Virchow. It is to be placed at the intersection of Karl and Louisen streets, a square which will henceforth be known as Virchow Platz.

Yellow Fever in Panama.—Yellow fever is gaining hold in Panama in spite of hard efforts to check it. The public health report on January 21, shows seven cases in December and three new ones from January 1 to 10. One death only is reported since December 1. Havana reports three cases and two recent deaths.

American Physiological Society.—The newly elected officers of the American Physiological Society are: President, Prof. Wm. H. Howell, of Johns Hopkins University; Secretary, Prof. Lafayette B. Mendel, of Yale University; Treasurer, Prof. Walter B. Cannon, of Harvard University. Additional members of the council are Prof. R. H. Chittenden and Dr. S. J. Meltzer.

Quarterly Publication on Children.—Under the title of *Eos* a new quarterly periodical dealing with the recognition and treatment of abnormal children and adolescents is published in Vienna by A. Pichler's Wittwe und Sohn. The editors are Drs. M. Brunner and S. Krenberger, Director Mell and Director Dr. Schloss. The first number contains, among other original communications, a paper on the soul of the deaf and dumb child by Dr. Brunner, and one on the mental life of a blind person by Luigi Ansaldi.

Hare's Practice of Medicine.—Messrs. Lea Brothers & Co. announce for early publication a completely new work which will be welcomed by every practitioner, teacher and student. Hare's Practice of Medicine, a text-book of the practice of medicine for students and practitioners. As the student of to-day is the physician of the future, and as the physician must always be a student, a single volume can be conceived as answering the requirements both of a text-book and work of reference. To produce such a volume the author has brought to bear his experience of twenty years of active hospital and private practice, during which period he has been constantly engaged in teaching the subjects of clinical medicine and therapeutics. This didactic work has enabled him to understand the difficulties which confront the student and to present the principles and data with the utmost clearness. The book has purposely been given a clinical character. For this reason illustrations and plates have been introduced wherever an important point could be made more clear than by verbal description.

Methods of Antivivisectionists in London.—Mr. Edgard Speyer, the chairman of the Nervous Disease Research Fund, which carries on its work in the National Hospital for the Paralyzed and Epileptic, having been asked by the Hon. Stephen Coleridge, on behalf of the National Anti-Vivisection Society, whether the researches involve experiments on living animals, has sent the following reply: "Dear Sir,—As you are already aware, the National Hospital is not a place licensed under the Act for experiments on living animals. I am informed, nevertheless, that your society endeavored to prevent subscriptions being sent to it on the ground that some members of the medical staff, in their private capacities, are licensed under the Act. The Nervous Disease Research Fund is an endeavor to provide funds for research into the origin and cure of those diseases. It will be conducted in the hospital under the advice of the medical staff. That being so, your past treatment of the hospital shows that it has nothing to expect from your society in the way of support. As this removes the only *locus standi* you might otherwise have to interfere, I do not think it necessary to enter further into the subject of your letter. Yours truly, Edgar Speyer. December 14, 1904."

Increase of Insanity in Connecticut.—The annual report of the superintendent of the Connecticut Hospital for the Insane shows that there were 2,259 patients in the institution for the year ending September 30, 1904.

"It is unwise," says the superintendent, H. S. Noble, "to attempt longer to blind our eyes to the fact that all recent statistics bear witness to a large increase in insanity. It is a fact easily verified by a glance at the statistics of the State, that the foreign element of our commonwealth shows a much larger proportion of insanity than prevails among the native born. Although the native insane have increased to some extent, they have not done so in any such proportion as is apparent among the foreign elements. In 1900 the foreign-born population of the State comprised 26 per cent. of the entire number. From 1898 to 1902, four years, 38 per cent. of the admissions to the hospital were of foreign birth and parentage. In other words, the 26 per cent. of foreign population furnished 38 per cent. of insane during those four years. Why the emigrant population should be especially prone to mental alienation cannot be discussed here; it may be remarked, however, that in most European countries, the former homes of our adopted citizens, the ratio of insane to the general population is higher than it is in this country."

Hongkong College of Medicine for Chinese.—We have received, writes the *British Medical Journal*, a remarkable and—from the point of view of human progress—even inspiring document in the calendar of the Hongkong College of Medicine for Chinese, in which is set forth how it was founded in 1887, largely through the efforts and enthusiasm of Sir Patrick Manson, Dr. James Cantlie (the earlier Deans of the College), the late Rev. Dr. Chalmers, and the late Dr. William Young. The College has its headquarters in the Alice Memorial Hospital, Hongkong, and the affiliated Nethersole Hospital is also open to students for purposes of clinical instruction. The Rector, who is the President of the Governing Court of the College, is Hon. Francis H. May, C.M.G., Colonial Secretary, and its present Dean, the third in the succession, is Dr. Francis W. Clark. Up to 1904, 87 students had been enrolled, of whom 28 had retired, 40 were engaged in study at various stages of the curriculum and 19 had passed all the examinations, had been certified fit to practice their profession, and were granted the title of Licentiate in Medicine and Surgery (L.M.S.H). The list of their names begins with Sun Yat Sen, Japan, and ends with Peter Quincey, Shanghai. The minimum period of study is five years, and all professional examinations are conducted by independent examiners appointed by the Senate, who, as a rule, have no other connection with the College. Candidates are required, after having passed a matriculation examination, to have attended courses of instruction in

all, or almost all, the recognized subjects for the home degrees, including tropical diseases and infective fevers. During 1905 four medical scholarships are open for competition among the members of the school. It is not too much to say, on the strength of such a record alone, and assuming for the nonce the prophetic rôle, that the so-called Yellow Peril, if such there be, is growing beautifully less.

Our Immigrants not so Bad.—Dr. Allan McLaughlan, who is in the United States Public Health and Marine Hospital Service, at Washington, contributes to the January *Popular Science Monthly* a paper which cuts to the quick the fallacies of that large class who make of our foreign immigrants a scapegoat for a preponderant share of our social and political evils. From ten countries named, the percentage of illiteracy among our immigrants is but about one-third of our own general average. The native children of foreign-born parents, taking the whole foreign-born population as the basis, present but about one-eighth the percentage of illiteracy found in their parents; proving that our illiterate immigrants are quick to take advantage of the opportunity of education for their children. Indeed, the native children of foreign parentage make a better showing in this respect than the children of native white parentage; statistics of school attendance give a better record to foreign-born white children and native white children of foreign parentage than to native white children of native parentage. The charge of clannishness, and consequent lack of assimilation, of the more ignorant immigrants Dr. McLaughlan rejects, so far as it is regarded as a fault peculiar to them. "The Italian, or the Jew, or the Slav, do not shrink away from their American neighbors more than their American neighbors shrink from them." The apparent excess of criminals in our foreign-born population does not mean what it seems to mean at first sight. The vast majority of crimes among any people are committed by members of the male sex between the ages of twenty and forty-five years. Now seventy-five per cent. of our immigrants are between the ages of fifteen and forty on arrival, and the males are to the females as two and one-half to one. In view of these facts, the usual comparison with our entire population in the matter of criminality is manifestly unjust. The responsibility for the "slum," often charged to the immigrant, lies with money-grasping property-owners and incompetent civic administrations; the immigrant is its victim, not its parent. Naturalization frauds and kindred ills are simply our own sins, taking advantage of whatever promising material immigration may offer.

OBITUARY.

Dr. Otis Eugene Hunt, of Newtonville, Mass., died last week. He was born in Sudbury, in 1822. He was graduated at Berkshire Medical College in 1848 and continued in active practice until 1885.

Dr. Cornelius J. Dumond died at his home in West Forty-second Street, New York, on January 21. He was sixty-eight years old, and had been in active practice forty-two years. He was a member of the Holland Society.

Dr. Odelia Blinn, a pioneer among the women physicians of Chicago, died in that city January 21. She was sixty years old. Dr. Blinn was a graduate of the Women's Medical College of Philadelphia, and came to Chicago about the time of the great fire. She was the first person to advocate free public baths. Dr. Blinn was a member of the Chicago Medical Society and of the Woman's Press League, and devoted much time to Y. W. C. A. work. She gave freely to philanthropic undertakings.

Dr. Leonard J. Gordon died at his home, 114½ Mercer Street, Jersey City, on Thursday last, from heart disease, after an illness of three months. He was born in New York on April 16, 1844. In 1860 he became a student at the New York University. When the Civil War broke out he enlisted in the Seventy-first New York Volunteers, and later volunteered in the Sixth New Jersey, of which he became Adjutant. For ten years he was engaged in business in New York, and for a time was private secretary to Daniel Drew. In 1872 he entered Bellevue Medical College, from which he was graduated three years later. Dr. Gordon practised medicine in Jersey City for two years, and was then appointed chemist of the Lorillard Tobacco Company, which position he held until the business was absorbed by the American Tobacco Company in 1894.

SOCIETY PROCEEDINGS.

WESTERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

Fourteenth Annual Meeting, held in Milwaukee, Wis., December 28 and 29, 1904.

The President, Charles H. Mayo, M.D., of Rochester, Minn., in the Chair.

(Continued from Page 144.)

Mortality, Disability and Permanency of Cure in Surgery.—This was the title of the President's Address, which was delivered by Dr. Charles H. Mayo, of Rochester, Minn. The author stated that a careful selection of cases, asepsis, and the kindness of Providence might give a low death rate which would cover much poor surgery. There was no general rule for computing surgical mortality at present, and it was best to accept the laymen's view that the operation had caused death where the patient went into the hospital alive and came out dead, regardless of the cause of death or time after operation. Failure to grasp the surgical opportunity at the proper moment was the cause of an increased mortality and disability, as well as a reduction in cures. The layman as well as the professional man understood that many diseases, such as appendicitis, ulcer of the stomach, and gall-stone disease, might each have repeated medical cures, and that in the same cases early operation was successful with a low mortality, the complications of delay causing the most trouble. During this year in St. Mary's Hospital, 516 operations for appendicitis were made, with 4 deaths. Their hospital detention was reduced an average of eleven days each, amounting to fourteen years' saving over the time which would have been required for the same work five years ago. In 205 hernias during the year this saving was from one to two weeks in each case. Among stomach operations, 108 gastroenterostomies gave 8 deaths (7.4 per cent.), most of these in late cancer, while 13 pylorectomies and partial gastrectomies gave no deaths because in an early stage. There were five deaths in 101 hysterectomies, more than one-half of these being due to an increased effort to cure cancer. Altogether, up to December 1, 1904, one thousand operations for gall-stone disease gave a mortality of five per cent. There were 673 cholecystostomies, with 2.4 per cent. mortality; 186 cholecytectomies gave a mortality of 4.3 per cent. The common duct cases, 11 per cent.; cancer, 22 per cent.; showing that one case in five had passed the safe time for operation, while early operation in 416 cases gave but two deaths The brain was poorly constructed for repair, hence late operations gave only occasional permanent and complete cures.

The progress in the treatment of cancer was through a study of lymphatics involved in metastasis.

Surgical Diseases of the Pancreas.—Dr. D. C. Brockman, of Ottumwa, Iowa, stated that recent studies of the pancreas showed the importance of internal secretion from the islands of Langerhans; also the influence of regurgitation of bile into the pancreatic ducts, as a cause of pancreatic inflammation. Biliary disturbance was mentioned as the chief cause of pancreatic disease, and the author stated that pancreatic cysts were believed to be mostly due to this cause. He reported three instructive cases of cyst of the pancreas, and then gave an outline of inflammatory troubles, with special reference to the diagnosis and treatment of acute and chronic pancreatitis.

Cysts of the Pancreas.—Dr. D. W. Basham, of Wichita, Kan., followed with a paper on this subject. He referred briefly to the physiological anatomy of the gland, in order to elucidate the principles underlying the formation of a cyst of this organ. He recounted the symptomatology, and pointed out the difficulty attending the diagnosis. As to treatment, Gussenbauer was the first to marsupialize the sac, and since then this had been a favorite procedure with most surgeons. The only question regarding this method was whether to attach the sac to the abdomen and incise at once, or to operate *à deux temps*. If there was plenty of time and the cyst was not so large that a day or two might make any difference in the result, he thought it was better to operate in two stages, stitching the sac to the peritoneum and muscles, and opening two or three days later. Excision of the sac was not often practical, but might sometimes be attempted. Often such a course would expose the patient to the risk of contaminating the peritoneal cavity with pancreatic secretions. He reported the case of a tumor of the pancreas in a woman, sixty-two years of age. The tumor was removed. The patient left the hospital at the end of seven weeks, and he had not seen her since. The woman's dyspeptic manifestations were better after the operation than before, but were not entirely relieved. About the first of December, the patient began to have serious trouble with her stomach, and called a physician, who was able to outline a tumor in the region of the pylorus, which he diagnosed as cancer of the stomach.

Dr. William D. Haggard thought inflammations of the pancreas occupied the most prominent position in the future development of surgery. Disease of this organ was closely allied to surgery for lesions in the upper abdomen. When one stopped to think how our knowledge had been amplified in the last two years relative to this sequestered organ, and when one considered that many cases of so-called gastritis, intestinal obstruction, etc., were after all probably instances of pancreatitis, it made surgeons realize that the lesson had been appreciated, but we had not yet mastered the diagnosis of this as well as other lesions, but nevertheless more attention should be addressed to lesions of the pancreas than had been done in the past. He referred to the three types of infection, and called attention to the excellent work done of Opie, Robson, and others.

Dr. Brockman, in closing, expressed the opinion that pancreatic cysts were not so uncommon as had been supposed. He had had four such cases in the last twelve or fourteen years.

Excision of the Elbow-Joint for Traumatic and Arthritic Anchylosis.—Dr. B. Merrill Ricketts, of Cincinnati, Ohio, read a paper on this subject in which he drew the following conclusions: (1) Excision of the elbow-joint for anchylosis, due to any cause, at any age, is a most rational procedure. (2) If possible, it should be done before or at the time anchylosis is complete. (3) A posterior median incision is the most practical. (4) With care the operation can be done without injury to blood vessels or nerves. (5) Drainage should always be provided for. (6) The arm should be placed upon a right angle splint. (7) Results are better when only the articulating surfaces are removed. (8) If there is complete bony union of the articulating surfaces, much more bony tissue must be sacrificed, because disarticulation cannot be accomplished. (9) All soft structures cut transversely will unite, but new insertions are formed which destroy their function. (10) All attachments of tendons and muscles should be preserved. (11) All periosteum should be preserved. (12) If excision of the joint is complete, leaving only the ends of the shaft, flail joint can be prevented by approximating their ends with kangaroo tendon at the time of primary operation. (13) Wire or nail may be used, but their removal sooner or later will be imperative. (14) Flail joint rarely results from any form of excision, but is more likely to be found following excision of the entire joint. (15) If flail joint results, a mechanical device may be employed. (16) Injections of alcohol or one or more of the various astringents will increase fibrous tissue both in quantity and density.

The Operative Treatment of Fractures and Sprains.—Dr. A. E. Benjamin, of Minneapolis, Minn., stated that frequently fractures were not recognized, and that complicated joint fractures without operative treatment gave poor results. All fractures should be examined with the X-ray to diagnose positively and locate the injury. The ordinary form of treatment of even simple fractures often resulted in a deformed and crippled limb. The term ununited fracture was a myth; the condition was invariably due to some preventable cause. The habit of using the X-ray in all fractures led to more operative measures, although without its use diagnosis was frequently impossible and treatment uncertain. There was frequently as great a subcutaneous injury from a fracture as in a compound fracture, and it was just as essential that an operation should be performed in such cases, in order to prevent a lasting injury to the nerve and muscle tissue. By an operation upon these fractures drainage was established, pain and fever lessened, exostosis and the organization of the exudate was less permanent, and necessarily there followed less permanent injury to the soft structures. Many of the past inexact operative and exact methods were employed. Associated with fractures there was frequently a sprain or a tearing away of ligaments, cartilages and dislocations. The progress of a joint that had been sprained was often slow and discouraging, resulting in a weak and insecure union of ligaments. It was advisable to operate upon a number of sprains, especially where there was a great deal of exudate and pain. By the operative method drainage was established, pain relieved, and ligaments could be stitched in their natural place of habitation, the convalescent period was shortened, and a greater proportion of cures resulted.

The Surgical Consideration of Gastric Dilatation.—Dr. A. M. Pond, of Webster City, Iowa, after considering the etiology of gastric dilatation, stated that in the last three cases of gastric dilatation due to impairment of the stomach wall he had modified the standard operation. Sufficient time, however, had not elapsed to warrant a description of the operation. The last case was operated June 4. In each instance a very satisfactory result was obtained. The success of the operation depended upon two very important factors, patency of the pyloric orifice, and the ability of the gastric

muscle to regain its normal tone. The author believed that gastric dilatation was usually a sequence rather than a primary cause of discomfort, and that it owed its presence to some disturbance of the elemental dynamics of digestion. It was, on close analysis, merely one of a symptom-complex of the upper abdomen, but a very valuable one, the importance of which should be included in the consideration for operative restoration.

Treatment of Acute Perforations of the Upper Abdominal Viscera.—Dr. Van Buren Knott, of Sioux City, Iowa, pointed out the importance of the early recognition of such an accident, saying that an accurate diagnosis as to which organ was involved was neither possible nor necessary at all times. The symptoms of gastric or duodenal perforation would usually be more intense than those of perforation of the gall-bladder. Previous history of the case was of importance in making a differential diagnosis. The treatment was successful in direct ratio to the promptness with which it was instituted. The resulting peritonitis was the most important result of the accident, and its treatment in the various cases was similar. He emphasized the value of posture in treatment.

Pneumatocele.—Dr. L. L. McArthur, of Chicago, reported a rare case of pneumatocele, saying that it was a gas-containing tumor of the cranium—very rare—there being but thirty-two recorded cases since 1741. It always originated in connection with either the mastoid or frontal sinuses. It was not to be confused with emphysema, which was gas in the cellular tissue. Pneumatocele was gas between the pericranium. Incident to the elevation of the periosteum were secondary bony outgrowths, giving the tumor a peculiar feel. In the preantiseptic era the simple benign pneumatocele became a dangerous affair, because of the frequent connection with mastoid sinuses, with the potential septic meningitis. Since antiseptic surgery had become well-established, all of these cases recovered.

The Value of Skiagraphy in the Treatment of Fractures.—Dr. H. A. Sifton, of Milwaukee, Wis., exhibited in connection with a paper on this subject numerous skiagraphs. He was of the opinion that, when it was possible, the Roentgen ray should be used in the treatment of every fracture. It had its deceptions, but these meant nothing to the physician who had made a study of the subject, and was familiar with the conditions under which the skiagraph was taken. Some urged its use in the obscure and complicated cases only, but the difficulty with this plan was that we could never tell whether or not a fracture was complicated until a radiograph of it was taken. It was the surgeon's duty to do his best for the patient, and to do this he should look upon every case of fracture as complicated, until it had been shown to be otherwise by a good radiograph. A good radiograph was of value for future information from a forensic standpoint, but no radiograph, in his opinion, should be admitted as evidence in any medicolegal dispute, unless both parties to the dispute knew the conditions under which the radiograph was taken.

Dr. L. L. McArthur said the X-ray was of immense importance to the surgeon from a forensic standpoint. He urged that the surgeon protect himself, whenever possible, by making an X-ray picture of a fracture after the limb had been put in the best possible position, and condition, and submitted to the patient, telling him that that was the best position that could be obtained, and asking him if he was satisfied with it. In this way the surgeon allowed the patient to know that he had utilized every means in his power and all the instruments of precision to accomplish a good result. The surgeon should impress upon the general practitioner and the laity that it was not essential for a good functional result to have actual anatomical reposition of the fractured ends.

Dr. J. W. Andrews said, it was a revelation to him that several skiagraphs of the same case could show such a great difference. He concurred with Dr. McArthur that it was unnecessary to have absolute apposition of the fragments, yet the laity and some physicians, especially in the malpractice suits, felt that there must be absolute apposition, and that union must take place in that position; hence there was a growing tendency on the part of the laity to have fractures examined by someone with the X-ray after healing had occurred, and unless the result was a perfect one, there were threats of a malpractice suit.

Dr. C. E. Ruth said a number of malpractice suits emanated as the result of fractures, where the basis of the proceeding had been the supposed findings from skiagraphs. He would dislike very much to treat a case of fracture without having taken skiagraphs or having made fluoroscopic examinations of the limb in different positions. The surgeon should be careful not to tell any patient that he would get a perfect result.

Dr. A. I. Bouffleur stated that as a confirmatory measure the X-ray was of great value, but as a substitute for ordinary means, it was in his opinion not proper to place the reliance on it which he had heard at different times concerning it.

Dr. M. L. Harris said the Association should not go on record as supporting the statement that in the treatment of fractures the X-ray should be used. He did not think it was a necessary means of diagnosis. In nine cases out of ten it was not only unnecessary, but it did not furnish the surgeon with any information which could not be obtained in other ways. He admitted its value in showing something which one could not detect in any other way. He pointed out the fallacies of the X-ray. It was impossible in many instances for anyone to interpret correctly an X-ray picture. Skiagraphs should never be admitted as evidence in a medico-legal contest.

Dr. A. E. Benjamin said it was well to employ the X-ray as an additional confirmatory aid in the treatment of fractures.

The Manufacture and Use of Tin Splints.—Dr. Arthur T. Mann, of Minneapolis, Minn., made a plea for the general utility of tin splints. He pointed out the simple equipment necessary to make them; also the ease of making the splints and patterns for them. He described several tin appliances which were useful to the surgeon, and among them a device for regaining flexion and extension of the elbow joint after fractures and dislocations. He also exhibited a device for the protection of the line of sutures in operative cases of cleft palate.

Syncytioma Malignum.—Dr. H. C. Crowell, of Kansas City, Mo., reported a case of this comparatively rare disease, which was accompanied by a detailed pathological report of the specimen removed. He referred briefly to other cases which he had found in the literature.

Dr. Archibald MacLaren reported a case of what he had supposed to be a soft edematous fibroid from

the history, which came on five months after delivery. Probably there was no growth present until after the birth of the child. There was no extension beyond the wall of the uterus. The fundus was diffusely infiltrated with this peculiar fungous mass. Sections of the mass were examined by a competent pathologist and a diagnosis made of syncytioma malignum. The uterus was removed above the internal os, in the belief that it was simply an edematous fibroid, and the case treated like any ordinary supravaginal amputation. The woman, at the present time, had had no return of the disease, and there was no extension apparently to the lymphatics or neighboring tissues. A year had elapsed since the operation was done.

Fractures of the Tarsal Bones.—Dr. Daniel N. Eisendrath, of Chicago, called the attention to the surgical anatomy of these bones, and the mechanism of fractures. He spoke of compression fractures; fractures of the neck of the astragalus following sudden dorsal flexion of the foot; fractures of both astragalus and calcaneus following forced supination or pronation of the foot; fractures of the astragalus which resulted from forcible action of the muscles of the calf; crushing fractures, and gunshot fractures. He discussed the symptoms and diagnosis together. In considering the treatment, he reported six interesting cases, after which he drew the following conclusions: (1) The astragalus and os calcis bear the entire weight of the body. (2) They are most frequently broken in falls from a height directly upon the feet (compression variety), or by tearing off of a portion of one of the bones either when the heel is fixed or sudden supination or pronation, or in forcible dorsal flexion of the foot. (3) Early diagnosis, on account of the danger of sepsis from secondary skin necrosis, is of great importance. (4) If there is no displacement of fragments, treat the case by cast for six weeks, with early massage. If displacement threatens necrosis of skin, convert into open fracture and remove the fragment or suture it.

Ptosis of the Abdominal and Pelvic Organs.—Dr. R. C. Coffey, of Portland, Oregon, read a paper on this subject, which was accompanied by numerous illustrations. He drew the following conclusions: (1) The peritoneum is attached firmly, not only to the diaphragm, but loosely by all its outer surface to the abdominal and pelvic walls by means of loose connective tissue which allows it to move freely, but holds it always in contact. This connective tissue is much increased around the attachment of the supports of each organ. The irritation underneath and back of the peritoneum is followed, first, by an exudate which fixes it immovably to the abdominal wall. This exudate is soon displaced by an increase of normal connective tissue sufficient to meet the demands. The peritoneum itself is but slightly elastic, its seeming elasticity being due to the elasticity of the subperitoneal connective tissue. (2) Two peritoneal surfaces brought together and held firmly in an aseptic state blend and become one membrane. If suppuration or other disturbance occurs, blending does not take place, but inflammatory adhesions are formed. The former is permanent, while the latter is transitory, and will be absorbed generally. This differentiation is all-important. (3) The uterus is suspended entirely by its peritoneum and connective tissue. (4) The so-called true ligaments are not true ligaments, but muscles, and therefore perform the same function as all other muscular fibers in the animal organism, which is intermittent contraction, but never constant action. Their function is to sustain the normal poise or balance of the uterus during the changing position of the body. (5) Whatever may be the cause, the condition existing is a stretching of either or both the peritoneum and connective tissue. The condition may be local or general, and may involve the support of one, more than one, or all the abdominal and pelvic organs. (6) The treatment in a general way will be the shortening of the peritoneum at the points at fault by some method of plication, and blending, or by bringing the peritoneum back to its normal contact with the abdominal wall. (7) The method (he described) for suspending the liver is, Dr. Coffey believes, almost ideal theoretically, and so far in his experience clinically and experimentally, in that it shortens the normal suspensory ligament, supplements it by extending the ligament to one or both lobes by blending of peritoneum. (8) None of the operations for gastroptosis so far are theoretically or practically ideal for all cases. The hammock operation, stitching the omentum to the abdominal wall, is best suited to those cases due to adhesions holding the stomach out of place by its omentum, in which the condition accompanies operations on the lower abdomen or pelvis only. No discomfort has been observed by any of my patients. Posterior gastro-enterostomy is the best operation for those cases due to dilatation or pyloric obstruction of any kind, and is all that is necessary, as it is held by its attachment high up and well back to the transverse mesocolon.

Appendicitis, with Special Reference to this Disease in Women.—Dr. Archibald MacLaren, of St. Paul, Minn., said that in the light of recent experiences he believed the only safe advice both to the patient and the physician was that the appendix should be immediately removed in the early hours of every acute attack of appendicitis, and especially in first attacks, when the symptoms lasted six hours. On the other hand, he did not believe that every case of appendicitis should be operated upon as soon as the diagnosis was made, because the physician frequently did not see these cases until from the third to the sixth day. The favorable time had now passed, and, as Richardson had said, some of these cases were in such bad condition that the operation itself might be enough to take away the only remaining chance of recovery. He had made 422 appendectomies. In the first 241 there were 72 suppurative cases. Of these there were 42 men and 30 women, in spite of the fact that his work was largely the surgery of women. During the same time he had removed appendices showing chronic inflammatory changes 153 times in women and only 17 times in men. He did not quote these figures for the purpose of giving the impression that they fulfilled his idea of the true relationship of chronic appendicitis in the sexes. He did not believe that chronic appendicitis was as frequent in the male as in the female, but it probably was not twice as frequent in the latter sex. It was, he believed, only a curious accident that he had seen proportionately so many acute cases in men and so very few chronic cases.

Management of Hospitals in Cities of One Hundred Thousand Population or Less.—Dr. D. S. Fairchild, of Des Moines, Iowa, stated that the problems involved in the management of hospitals in the smaller cities were difficult and complicated, growing out of two important facts; first, the supposed self-interest of individual members of the medical profession, and, second, the lack of experience and knowledge on the part of boards of management. Public hospitals were generally of three kinds, as determined by the auspices under which they were organized and in part supported. (*a*) Hospitals under the auspices of some church; (*b*)

hospitals under the auspices of some society, and (*c*) city hospitals supported by public taxation. The method of appointment of physicians to hospitals was liable to abuse only when piety or church zeal was mistaken for competency. The author discussed the management of hospitals at great length.

Arthrotomy.—Dr. E. Wyllys Andrews, of Chicago, described a new method of arthrotomy for old dislocations of the shoulder-joint, and after mentioning the steps of the procedure at considerable length, he presented the following conclusions: (1) It must be considered established that great force is never justifiable in old shoulder dislocations. (2) Few cases can be left unreduced, on account of pain and pressure symptoms on the brachial plexus. (3) Resection is satisfactory, but not ideal or wholly safe. (4) Arthrotomy by the old incisions is tedious, and never has been widely practised. (5) Arthrotomy by the author's method is simplified and made quicker and safer. It would possibly be as safe as resection, and much more ideal in results.

Curettage and Puerperal Sepsis.—Dr. C. E. Ruth, of Keokuk, Iowa, discussed the etiology of puerperal sepsis, the kinds of infection, prevention, dangers, as well as curettage, drainage, and hysterectomy in such cases.

Our Duty to the United States Army and its Medical Corps.—Dr. Donald Macrae, Jr., of Council Bluffs, Iowa, pointed out the importance of having a more efficient medical corps in the United States army. He made an appeal to the patriotic sense of the American surgeon in civil practice to stand by the recommendations of the Surgeon-General of the army, and otherwise to use his best endeavors to relieve a most deplorable condition in the most important branch of the service. He thought that the Surgeon-General should be elevated to lieutenant-general, and be equal in rank to the head of any other branch of the army. A medical officer should be added to the general staff. A resolution was introduced and unanimously adopted respectfully petitioning President Roosevelt to direct that the military authorities provide a field medical organization for our army at least equal in all respects to the best that exists in any army, and which will meet the approval of military sanitarians generally, to the end that the sick and wounded in future wars may receive adequate care and attention. The Secretary was instructed to forward a copy of this resolution to President Roosevelt at once.

Removal of the Covering of the Ovaries in Ovarian Dysmenorrhea.—Dr. George G. Eitel, of Minneapolis, Minn., presented a preliminary study on this subject, and described the technic of the operation he had performed in seven cases, as follows: The ovary is brought into clear view through a median abdominal incision; and one hemostatic forceps is placed at the juncture of the utero-ovarian ligament and ovary, and another on the upper border of the broad ligament close to the ovary (lateral). By means of these two forceps the ovary is held by an assistant in the proper position, while the operator makes an incision with a sharp scalpel from the utero-ovarian ligament to the lateral attachment to the broad ligament through the covering, and then carefully dissects one side, and then the other, down as far as cysts are encountered. The flaps of the covering of the ovary are now trimmed off, preferably by means of a pair of scissors. This having been done, the utero-ovarian ligament is shortened by doubling it upon itself in a similar manner as is in vogue in shortening the round ligaments, in order to hold the uterus in a normal position. There is generally some hemorrhage as the base of the ovary is encroached, which can easily be controlled by pressure forceps and fine ligatures.

The Diagnosis of Early Tubal Pregnancy.—Dr. William E. Ground, of Superior, Wis., after going into the diagnosis exhaustively, and quoting from the literature, stated that during the last year he had operated upon ten cases of tubal pregnancy. He had operated upon 28 cases altogether. His deductions were based on the histories and the gross appearance of the uterus and appendages at the time of operation. He was firmly convinced that ample pathology was present to cause the arrest of the fecundated ovum in the tube. Five of his cases were in primiparæ, who gave a history of painful menstruation and leucorrhea. Thirteen cases gave a history of a prolonged period of sterility; by this he meant three years or longer. The remaining 12 cases occurred in parous women, who had borne children or had been pregnant in less than three years. Many of these women gave unmistakable evidence of pre-existing pelvic disease. One primipara, had been married three years, one five, and another eleven years, before tubal conception occurred. Two cases occurred in unmarried women, one of whom had had a criminal abortion produced. Complications arose, and she was sent to Dr. Ground for abdominal section, when an unruptured tube containing a six weeks' fetus was found. Another case, a grass widow, was known to have had chronic appendicitis, was taken with sudden severe pain in the right lower abdomen, followed by considerable shock, but she soon rallied and ran a slight fever. At this juncture he saw her. Menstrual irregularities were denied. Tenderness was present rather low in the iliac fossa for appendicitis, uterus was enlarged, and a slight bloody discharge came from the vagina. There was an ill-defined tumor to the right of the uterus. The abdomen was opened and found to contain blood clots and bloody serum. The right tube was ruptured on its dorsum, at about the middle, but the fetus was still in the tube. Chronic appendicitis was also present, and the appendix removed. Two cases had small fibroids, and one had an ovarian cyst as large as an orange on the opposite side.

Officers.—The following officers were elected for the ensuing year: President, Dr. H. D. Niles, Salt Lake City, Utah; First Vice-President, Dr. E. Wyllys Andrews, Chicago; Second Vice-President, Dr. W. W. Grant, Denver; Secretary-Treasurer, Dr. B. B. Davis, Omaha, Neb.

Kansas City, Missouri, was selected as the place for the next meeting, with Dr. H. C. Crowell, as Chairman of the Committee of Arrangements.

CHICAGO MEDICAL SOCIETY.

Regular Meeting, held November 23, 1904.

The President, John B. Murphy, M.D., in the Chair.

SYMPOSIUM ON CRIMINAL ABORTION.

The Duty of the Medical Profession in Relation to Criminal Abortion.—Dr. C. S. Bacon contributed this paper. It is estimated, he said, that from six thousand to ten thousand abortions are induced in Chicago every year, a majority of which are in married women. To collect data on the subject, to call the attention of the profession to it, and to exercise an influence toward restraining the evil and checking the debauchment of the minds of the profession and the community, a committee of the Council of the Chicago Medical Society was appointed about a year ago. This committee has now

arranged for a symposium as a feature in its work of education. From the medical and social sides of the problem, four reasons are given for repressing the practice of abortion. (1) It is an injury to the embryo or fetus destroyed, for the fetus is a living independent human being, and has the right to existence which belongs to all human beings, and it should be protected in this right. (2) It is an injury to the mother, for it is an unjustifiable risk to her health and her life. (3) It is an injury to the relatives of the unborn child and to the mother. (4) It is an injury to the State. According to the common law, the fetus is not considered a being until after quickening, and therefore it is not a crime to destroy it. After quickening, its destruction either by the mother or by a third party is a misdemeanor, but not a crime punishable by imprisonment. According to the Illinois statutes, which take the place of the common law, there is no distinction between an animate and an inanimate fetus, and the induction of abortion is punished by imprisonment from one to ten years. The consent of the mother does not absolve the third party who does the act. Intent is the essence of the crime, and the efficiency of the means employed is not considered. If the mother dies the act is murder. Notwithstanding the prevalence of the crime, there are practically no accusations or indictments for abortion unless the mother becomes seriously ill or dies. Even in the latter case her relatives and friends generally try to prevent any investigation in order to shield her reputation. The influence of the physician should be exerted to persuade the injured mother or her friends to act. In case of her death, it is his duty to report the case to the Coroner as he would any other case of homicide. If a case comes to trial, it is necessary that the physician know the rules of procedure of courts and the rules of evidence. In Illinois no communications to physicians are privileged. Attention is called to the great importance of a dying declaration which may become the chief factor in producing the conviction. It must be voluntary, made when the patient has given up hope of recovery, and should state that a certain individual has committed the act. In closing, the author called attention to the need of maternity asylums for the unmarried.

Decisions of Authority.—The next speaker was Rev. Peter J. O'Callaghan, of the Order of Paulists. who spoke on the moral and religious objections to inducing abortion. He said it was one of the triumphs of the ancient Church to have practically eradicated the crime of abortion, and that this Church stands to-day where she stood a thousand years ago. She declares that no man has the right to destroy by any direct act the life of an innocent human being. In the face of a sentiment which has persuaded a large section of the medical profession that direct abortion is sometimes not only justifiable, but even commendable, that Church has unflinchingly declared that the direct taking of an innocent human life is always murder, no matter what be the stage of its existence. In 1884 her authoritative teaching body was asked whether it was safe to teach in Catholic schools that the operation of craniotomy is sometimes justifiable. The answer was that it was not safe so to teach. In 1889 that same body was asked if any operation at all looking to the direct killing of the child in utero was justifiable. The question was also answered in the negative. Again it was asked if this should be done when absolutely necessary to save the mother, and in 1895 this question was answered in the negative. Again, the formal question was asked, if, in extra-uterine conception, any operation be justifiable which meant the death of the child. This was answered in the negative. The Church, therefore, has constantly said that no one has a right on any occasion to procure directly by any act of his the death of any human being. It maintains the right of the unborn child to live just as much as the right of the mother to live. If one or the other must die, or both die, and if both die without act of ours, the responsibility is not ours. Such is the position of the Catholic Church. Although, he said, these are not dogmatic definitions of Catholic doctrine, they are the authoritative decisions of the Catholic Church on the question of abortion. The reason for the uncompromising position of the Church in this matter is clearly to be found in the decalogue, "Thou shalt not kill." The Church has always feared to make what she considers the word of God say less than it says or more than it says. The position of the Church cannot be appreciated by any who regard the Ten Commandments merely as a mosaic code of moral law, or as an embodiment of Jewish experiences in ethical culture. To the Church the Ten Commandments are a revelation of the essential and profoundly vital conditions of moral health. She regards as superficial the advantages that expediency may suggest in the breaking of the law. If the taking of human life is a crime only because men have found that society is impossible without the severest punishment of murder, then may the question be raised, How far is it necessary to respect life of the individual? If it is only expediency which sets down taking of human life as a great crime, then the shifting demands of expediency must be hearkened to. If the demands of expediency are cogent in determining the right to cut off human life in any stage of its existence, then we have not morality, but only an emotional empiricism. Whether the Kantian maxim that a moral law must be capable of universal application be a true definition of the essential quality of all moral law or not, it is certainly a good test of the morality of any principle of conduct. Principles of conduct cannot be arbitrarily confined to particular cases. If it is right to take human life to save the mother's life, it is right to take a human life to save a mother's honor. If it is right to destroy the unborn child in order to avoid the suffering that shame brings, it is right to destroy a child whose birth would mean for others the sufferings of poverty. If there is such a thing as therapeutic abortion that is commendable, Father O'Callaghan thinks that there is no such thing as a criminal abortion that is reprehensible. Legislators may determine that some conditions justify abortion, while other conditions do not, but their judgment will not control the consciences any more than their present laws inconvenience the most of those that are now guilty of what is called criminal abortion.

Criminal Abortion as it Comes Before the Coroner's Office.—Mr. John E. Träger, Coroner of Cook County, said that before his advent in the Coroner's office he had little or no opportunity to know to what extent criminal abortion was practised, especially in a large cosmopolitan city like Chicago. He found, after investigation, that many of the abortions were induced by midwives who made a specialty of it, and whose business cards announcing

their vocation could be found in some of the houses of ill-fame in the city, being distributed by the landladies or inmates to the young men, or old men, for that matter, who might some time want that kind of service. In consulting the records of the office he found that there had been very few persons held to the grand jury and fewer still ever convicted of the crime of criminal abortion. This news discouraged him, and he made up his mind to devise some way to stop it. During the past four years, with the assistance of the State's attorney, four of those midwives were sent to the Joliet Penitentiary. The first year of his term he investigated 42 cases of criminal practice, the second year it fell off to 27; last year it was further reduced to 18; but this year it would reach 35, which is an increase of nearly 100 per cent. He held six midwives and one physician to the grand jury this year, and had already convicted two. In investigating the cases of abortion that came to his office, he finds that the cause for the act differs in most every case, that is, among married women; in some cases on account of poverty; in others on account of children coming too fast, and the society woman, who has not time to devote to maternal cares, and last, but not least the dwellers in modern flats. It has got so nowadays that a married couple with babies is denied admission to an apartment house or flat building, and it is his honest opinion that the attitude of the present-day landlord in refusing to rent to families with small children and allowing that impression to go out broadcast is indirectly the cause of much of the criminal practice in Chicago. He thinks the discussion as to the causes of the practice and its cure can be more safely left to physicians as they have a better opportunity of learning those things. All he could say is that he thinks it is the duty of physicians and his to try and check the practice—their's by advice to the women who come to them for assistance, and his by punishing the guilty who have violated the law.

Therapeutic and Criminal Abortion.—Dr. Charles B. Reed, in a paper on this subject, stated that in the advance of moral feeling, the opinion has developed that in certain cases where the lives of both mother and child are imperiled and one can be saved, the child should be sacrificed, since the value of the mother to the State is far greater than that of the unborn babe. Hence, where certain diseases or complications appear in or exist during the course of gestation and threaten the integrity of the case, a broad human sentiment now permits, nay even demands, the destruction of the fetus. When this situation eventuates before the viability of the child, it is recognized as a prophylactic or therapeutic abortion and becomes a justifiable measure in the presence of such conditions as hyperemesis gravidarum and eclampsia, which do not yield to treatment. In certain cases of beginning and advanced pulmonary tuberculosis, cardiac disease, insanity, severe nephritis or serious and irreducible uterine displacments with dense adhesions, the operation is justly performed. In cases of absolutely contracted pelvis, where the patient refuses Cæsarean section, abortion is sometimes desirable, although the relative dangers of the two operations do not greatly differ in skilful hands. The results of therapeutic abortion, when executed in a careful scientific way, are generally good, and the indications for its performance are found both in and out of marriage. Abortion in all its phases is necessarily more common in the married state, and it has been said that almost half of all child-bearing women have an abortion before the thirty-fifth year. It is also true that the medical man is most frequently approached by married women who desire the removal of the socially inconvenient egg. For this situation there is no excuse. When the product of conception is deliberately destroyed for social reasons only, and without physical justification, in a woman married or single, it constitutes a criminal offense before the human and moral law. It is ignorantly maintained by many that the dislodgment of the egg before quickening is in no sense reprehensible, because it is thought that the egg is not alive. This, the author says, is a distinction of degree only, and a species of special pleading, for the fertilized egg contains all the hopes and possibilities of a mature fetus, and while quickening usually occurs at the sixteenth week, the fetus is practically fully formed at an earlier period. The normal attitude of the enlightened professional man is hostile to abortion. It is well attested that nearly all of the desperate and fatal complications found in abortions occur in criminal cases. The deaths from such attempts are frequent and embrace a large range of causative conditions, among which, as the most important, he mentioned perforation, peritonitis, septicemia, pyemia, tetanus, endometritis, endosalpingitis, air embolism, abscesses, pneumothorax, thrombophlebitis, phlegmasia alba dolens, etc. Legal restrictions are relatively recent in origin, but none the less drastic. It is not the murder of a living child which constitutes the offense, but the destruction of gestation by wicked and unnatural means. The moment the womb is instinct with embryo life, gestation has begun, the crime may be committed. The liability of the mother in the eyes of the law is the same as that of the third person, and in many States is made equally culpable with the act. In Illinois the attempt is punishable by imprisonment in the penitentiary from one to ten years, and if the death of the mother results therefrom, it constitutes murder. But the law, unsupported by popular sentiment, has proved ineffective, and in many cases no attempt is made even to secure its enforcement, and the abortionist rests in security. It devolves upon the physician to keep the light before the public mind, not only in general, but in particular instances. The artificial conditions which drive unmarried girls to abortion should be everywhere strenuously opposed.

In the development of the vast scheme of creation the author says it is not surprising that the one great dominant chord of humanity is the sexual instinct. Openly or disguised, it controls the mainspring of human endeavor. It drives some to the convent, and some to the gallows, but unceasingly it drives with relentless energy toward the preservation of the race at the expense of the individual, and the woman is the most frequent sacrifice in the maintainance of racial immortality. On her head fall legal, moral and physical penalties that should be more evenly distributed. Let the legal and moral enactments be what they will, a broad humanity demands the protection of the mother and the illegitimate unborn babe. Let maternities be established and maintained. Let homes and places of refuge for the woman awaiting confinement be founded and supported. Give charity for the unfortunate girl who, with unreasoning animalism, attempts to escape her exposure and humiliation by abortion. Teach

chastity, teach restraint, but, above all, protect the devoted victim of her own strength or weakness from yielding to the eternal dominant impulse, and enable her to pass through her gestation and delivery free from the lofty scorn of an unsympathetic sisterhood.

Criminal Abortion in its Relation to Newspaper Advertising.—Dr. Rudolph W. Holmes discussed this phase of the question, and reported a medicolegal case of interest. After some years of close professional association with the pregnant, the author has become convinced that abortions among the better classes are essentially brought about by one group of causes which may be denominated social ones. He firmly believes that where one abortion occurs from the diverse pathological causes, many more are produced by the abortionist's instruments, drugs, or other measures. Education is absolutely indispensable to a proper realization of the heinousness of destroying the unborn child; the physician is the one above all others who may be the most influential in deterring women from having their desires fulfilled. Well-directed arguments concerning the dangers of having the operation done are to his mind more effective than too strong presentations of the moral aspect. So soon as the physician presents to the woman that she is doing a criminal offense, is breaking a moral law, he arouses her enmity from the suggestion implied that she is immoral or a criminal. The common law, which is founded on ancient and medieval customs, has fostered the belief that the fetus did not have life until quickening was noticed by the mother. To this day the States of Connecticut, Mississippi, Minnesota, Arkansas, and Oregon accept this obsolete interpretation of the common law in their statutes; other States and most countries by legislative action have removed such absurd qualifications as "quick with child" from their statutes defining criminal abortion. Although this really nonsensical belief that the fetus is endowed with life by the accidental circumstances of the mother feeling fetal movements has been done away with in medicine, law and theology, the laity still tenaciously adheres to the old idea with ulterior motives. The present law in Illinois as in nearly all other States making a great distinction between an abortion which does not destroy the life of the mother, and when she dies, the former is the felony of abortion, the latter is the felony of murder. Such a law is discriminative, as infanticide is murder, so should feticide be murder; the abortionist, directly, maliciously, with "malice aforethought" deliberately kills the fetus, while it is far from his intention to kill the woman. He is quite positive that the daily papers, magazines, and even some so-called religious papers are most fruitful means of disseminating the knowledge concerning the means for producing abortion, by covertly suggesting where the appliances may be obtained, the drugs bought, or even the instrumental methods which may be carried out. There is hardly one daily paper in Chicago which does not regularly print a list of advertisements of professional abortionists. The publishers and editors must be fully cognizant of the purport of the wording of these advertisements; in private these men would not stultify themselves by such declarations of ignorance, but as the veiled wording is an indispensable requisite for such public announcement, they hide behind a subterfuge. That a veiled advertisement may be brought in as evidence of the criminal intent of the abortionist has been amply settled in Massachusetts, and would undoubtedly be accepted in the courts of other States. (See *Journal*, June 23, 1900, page 1612.) In connection with the laws prohibiting the advertisements of abortionists, Dr. Holmes briefly reviewed the laws concerning the sale of abortifacients. In conclusion, the writer stated his belief that the time has come for the Society to take an active part in aiding the prosecution of notorious abortionists. This may be accomplished in various ways: (1) By bringing moral suasion upon newspaper management, so that they will refuse all advertisements of a suggestive nature; a committee of this Society might act as an advisory board of censors. (2) By working in friendly conjunction with the State Board of Health, City Health Department, the State's Attorney's office, and with the Coroner. If work is carried on along these lines, he thinks an enormous amount of data would be collected which would be of inestimable value to the several legal bodies.

The Common and Statute Laws of Illinois.—Mr. J. M. Sheehan, attorney for the Medicolegal Committee, briefly reviewed the history of criminal abortion. According to the ancient English common law, fetal life was held to begin only at the quickening and until such time no offense could be considered committed by an operation. No offense of any kind, with the woman's consent, was recognized as punishable. If, without the mother's consent, abortion was induced, simple assault was punishable. This law remained until a short time prior to the separation of this country from the mother country. Then, certain statutory enactments were passed in England which did not become laws in this country, but which were followed in many of the States. It was made an offense, a misdemeanor merely, to commit abortion or to induce premature delivery, even though the child had not quickened. In adition, there was a provision, if the death of the mother resulted, murder was the crime committed by one who was either the principal or accessory. Coming down to Illinois, which State adopted the common law, so far as it existed up to the fourth year of James I., this condition was found until the first criminal code was enacted, that abortion was defined in a manner slightly different from the crime as it exists upon the statute books to-day. Until 1867 the crime of abortion in the State of Illinois was defined, as follows: "Whoever by means of any instrument, medicine, drug, or other means whatever, causes any woman pregnant with child to abort or miscarry, or attempts to procure or produce any abortion or miscarriage, unless the same were done for *bona fide* medical or surgical purposes, shall be imprisoned in the penitentiary." This statute remained until the year 1867; that is, any abortion or miscarriage brought about, committed, abetted or advised by any person, unless it be for *bona fide* medical or surgical purposes, was punishable as a felony. In 1867 the legislature changed the statute, and enacted it as it now stands upon the statute books, and in lieu of the words for "*bona fide* medical or surgical purposes," the provision of the Illinois statute is, "Unless same were done as necessary for the preservation of the mother's life." In interpreting the words "necessary for the preservation of the mother's life," it has been held that it must be an actual physical necessity; that is, the mental depression which may come because of the unfortunate condition of the mother; the

threats of suicide, the probability of insanity, the nervous condition in which the mother at that time finds herself because of her surroundings, because of brooding over her condition, are not within the medical law; they are not conditions that will justify a physician or surgeon in saying that it is necessary for the preservation of the mother's life that her child should be destroyed. The courts in interpreting these words have properly held, that it must be an actual physical condition which renders improbable the continued life of the mother unless the life of the child be destroyed. Whether practical enforcement of the law as it stands is to be brought about is dependent upon public desire, public demands. Mr. Sheehan said that the law itself is as far advanced as is the public conscience. Indeed, it is further advanced apparently than the public demand for its enforcement would require, and so if anything is to be accomplished, it is not by making appeals to the legislature for a modification of the laws at this time, nor in making appeals for a more stringent law, but public conscience should be so stimulated as to require and demand that the law as it stands to-day should be strictly enforced.

Shall Communications of Physicians be Privileged?—Dr. Harold N. Moyer discussed this question. Unquestionably, the privileged communication or medical secret has stood in the way more largely than any one factor in the prosecution of the abortionist. The common law never had but one privileged communication, and this was not the result of a statute, but simply grew up as a part of the practice of courts, namely a communication between an attorney and his client was regarded as privileged. Dr. Moyer quoted the Roman law, the French law and the New York statute in regard to privileged communications. The New York statute reads: "A person duly authorized to practise physics or surgery shall not be allowed to disclose any information which he acquired in attending a patient in a professional capacity, and which was necessary to enable him to act in that capacity." He said that this statute might put an onus on the physician. So far as the privileged communication is concerned, it does not apply to this State, and it seems that fact is not generally known to the profession. The communication of a patient to a physician is absolutely unrestricted and open to the inquiry of the court, and this absolves a physician from all legal responsibility in case he goes into court with questions of this kind. Some years ago he urged a member of the legislature to obtain the enactment of a statute making the communications of physicians privileged ones. He regretted he made such a request, and is glad that it bore no fruit, and if to-day he heard of any attempt to have the legislature pass such a law, he would do his best not to have it passed. Such a law, he said, is not useful to the community, and it proposes an extraordinary burden on the profession in some particulars. This burden was clearly pointed out by citations from the laws of various States. Let us have no privileged communication in this State as applied to the medical profession. The courts will protect physicians. A communication made under the seal of the confessional is not a privileged communication in this State, yet he has never heard of a court in Illinois that has attempted to invade the sanctity of the clergyman's office. The courts are capable of protecting physicians against the wrongful use or abuse of medical evidence, and the matter could be safely left to them.

Mr. Fletcher Dobyns, Assistant State's Attorney, said the State's Attorney could do nothing in prosecuting abortionists until he had complete evidence, and prosecutions failed frequently because of the fact that evidence has not been properly obtained. He referred to the manner in which evidence should be prepared in these cases. The court instructs the jury that every material allegation in the indictment must be proved beyond reasonable doubt. It must be proved that a woman was pregnant, and that an operation was performed to induce abortion. It must be proved that such an abortion was not necessary to save the life of the mother, and that she died as a result of it. It is absolutely necessary for a physician in making his examination to make it carefully and exhaustively and preserve his data, so that he can refresh his mind, and be able to take the stand and say with absolute accuracy and certainty that the woman was pregnant. This would help the State's Attorney in proving to the jury beyond a reasonable doubt that pregnancy did exist. The next point to prove to the jury is that it is not necessary to perform an abortion to save the life of the mother; and the physician must be able to take the stand to tell the conditions he found, the treatment of the patient, and give his reasons clearly to the jury to show why it was not necessary to induce an abortion to save the life of the mother. Furthermore, it is necessary to show that death resulted from the operation by which the abortion was produced.

The symposium was further discussed by Dr. M. O. Heckard, Mr. H. H. Hart, Mr. Chas Allen, Dr. Lucy Waits, and Dr. Rosalie M. Ladova.

BOOK REVIEWS.

The Medical Record Visiting List and Physician's Diary for 1905. William Wood & Company, New York.

This edition of the *Medical Record* Visiting List has been revised to increase the amount of matter calculated to be useful in emergencies, and eliminate such as might better be referred to in the physician's library. The most important change is in the list of remedies and their maximum doses in both systems of measurement. The remainder of the contents of this handy little book comprises collections of facts and data suitably arranged for quick reference. The blank pages are ruled and labeled for the physician's daily records.

Progressive Medicine. Edited by Dr. H. A. Hare. Assisted by Dr. H. R. M. Landis. Vol. III, September, 1904. Lea Brothers & Company, Philadelphia and New York.

The present series deals with Diseases of the Thorax and its Viscera, by Dr. William Ewart, F.R.C.P.; Dermatology and Syphilis, by Dr. William S. Gottheil; Obstetrics, by Dr. Richard C. Norris, and Diseases of the Nervous System, by Dr. William G. Spiller.

As in the past so in the present volume we have correctly and adequately reflected the chief advances that have taken place in these fields of medicine during the past year. The practitioner who reads Progressive Medicine thoroughly may feel that in practically all lines of medicine he is abreast of the real advance army of investigators.